Chemical and Environmental Measurement Information

## Recra LabNet Philadelphia Analytical Report

Client: TNU-HANFORD B00-068 H1127

**W.O.** #: 10985-001-001-9999-00

RFW#: 0011L175

Date Received: 11-07-00

## **INORGANIC CASE NARRATIVE**

1. This narrative covers the analyses of 2 soil samples.

- 2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.
- 3. Sample holding times as required by the method and/or contract were met.
- 4. The cooler temperature was recorded on the chain-of-custody.
- 5. The method blanks were within method criteria.
- 6. The Laboratory Control Samples (LCS) were within the laboratory control limits.
- 7. The matrix spike recoveries were within the 75-125% control limits.
- 8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.
- 9. Results for solid samples are reported on a dry weight basis.
- 10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

J. Michael Taylor

VP, Laboratory General Manager

Lionville Laboratory

PECETVED

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**EDMC** 

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 12 pages.

H1127



## Recra LabNet - Lionville Laboratory INORGANIC ANALYTICAL DATA PACKAGE FOR TNUHANFORD B00-068 H1127

| DATE RECEIVED: 11/0 | 7/00    |     | •        | 1          | RFW LOT # :0 | 011L175  |
|---------------------|---------|-----|----------|------------|--------------|----------|
| CLIENT ID /ANALYSIS | RFW #   | MTX | PREP #   | COLLECTION | EXTR/PREP    | ANALYSIS |
| B10F88              |         |     |          |            |              |          |
| % SOLIDS            | 001     | s   | 00L%S177 | 11/01/00   | 11/08/00     | 11/09/00 |
| % SOLIDS            | 001 REP | S   | 00L%S177 |            | 11/08/00     | 11/09/00 |
| NITRATE BY IC       | 001     | S   | 00LXC076 | 11/01/00   | 11/29/00     | 11/29/00 |
| NITRATE BY IC       | 001 REP | S   | 00LXC076 | 11/01/00   | 11/29/00     | 11/29/00 |
| NITRATE BY IC       | 001 MS  | S   | 00LXC076 | 11/01/00   | 11/29/00     | 11/29/00 |
| TOTAL CYANIDE       | 001     | S   | 00LC110  | 11/01/00   | 11/13/00     | 11/13/00 |
| PH                  | 001     | S   | 00LPH094 |            | 11/08/00     | 11/08/00 |
| SULFIDE             | 001     | s   | 00LSDA52 | 11/01/00   | 11/10/00     | 11/10/00 |
| B10F89              |         |     |          |            |              |          |
| % SOLIDS            | 002     | s   | 00L%S177 | 11/01/00   | 11/08/00     | 11/09/00 |
| NITRATE BY IC       | 002     | S   | 00LXC076 | 11/01/00   | 11/29/00     | 11/29/00 |
| TOTAL CYANIDE       | 002     | S   | 00LC110  | 11/01/00   | 11/13/00     | 11/13/00 |
| TOTAL CYANIDE       | 002 REP | S   | 00LC110  | 11/01/00   | 11/13/00     | 11/13/00 |
| TOTAL CYANIDE       | 002 MS  | S   | 00LC110  | 11/01/00   | 11/13/00     | 11/13/00 |
| PH                  | 002     | S   | 00LPH094 |            | 11/08/00     | 11/08/00 |
| PH                  | 002 REP | S   | 00LPH094 |            | 11/08/00     | 11/08/00 |
| SULFIDE             | 002     | S   | 00LSDA52 |            | 11/10/00     | 11/10/00 |
| SULFIDE             | 002 REP | s   | 00LSDA52 |            | 11/10/00     | 11/10/00 |
| SULFIDE             | 002 MS  | S   | 00LSDA52 | 11/01/00   | 11/10/00     | 11/10/00 |
| LAB QC:             |         |     |          |            |              |          |
|                     |         |     |          |            |              |          |
| NITRATE BY IC       | MB1     | s   | 00LXC076 | N/A        | 11/29/00     | 11/29/00 |
| NITRATE BY IC       | MB1 BS  | Š   | 00LXC076 | * .        | 11/29/00     | 11/29/00 |
| TOTAL CYANIDE       | LCS L   | S   | 00LC110  | N/A        | 11/13/00     | 11/13/00 |
| TOTAL CYANIDE       | LCS L   | S   | 00LC110  | n/a        | 11/13/00     | 11/13/00 |
| TOTAL CYANIDE       | MB1     | S   | 00LC110  | N/A        | 11/13/00     | 11/13/00 |
| SULFIDE             | MB1     | S   | 00LSDA52 | •          | 11/10/00     | 11/10/00 |
| SULFIDE             | MB1 BS  | S   | 00LSDA52 | N/A        | 11/10/00     | 11/10/00 |

## Recra LabNet Philadelphia

## WET CHEMISTRY METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

|                                  | <u>ASTM</u>   | SW846             | <u>OTHER</u>       |
|----------------------------------|---------------|-------------------|--------------------|
| % Ash                            | -<br>D2216-80 |                   |                    |
| % Moisture                       | D2216-80      |                   | ILMO4.0 (e)        |
| % Solids                         | D2216-80      |                   | ILMO4.0 (e)        |
| % Volatile Solids                | D2216-80      |                   |                    |
| ASTM Extraction in Water         | D3987-81/85   |                   |                    |
| BTU                              | D240-87       |                   |                    |
| CEC                              |               | 9081              | c                  |
| Chromium VI                      |               | 3060A/7196A       |                    |
| Corrosivity by coupon by pH      | •             |                   |                    |
| Cyanide, Total                   |               | V 9010B/9014      | ILMO4.0 (e)        |
| Cyanide, Reactive                |               | Section 7.3/9014  |                    |
| Halides, Extractable Organic     |               | 9020B             | EPA 600/4/84-008   |
| Halides, Total                   |               | 9020B             | EPA 600/4/84-008   |
| EP Toxicity                      |               | 1310A             |                    |
| Flash Point                      |               | 1010              |                    |
| Ignitability                     |               | 1010              |                    |
| Oil & Grease                     |               | 9071A             | ·                  |
| Carbon, Total Organic            |               | 9060              | _ Lloyd Kahn (mod) |
| Oxygen Bomb Prep for Anions      | D240-87(mod)  | 5050              |                    |
| Petroleum Hydrocarbons, Total Re | coverable     |                   | EPA 418.1          |
| pH, Soil                         |               | ✓ 9045C           |                    |
| Sulfide, Reactive                |               | Section 7.3/9030B | •                  |
| Sulfide                          |               | √ 9030B(mod)      |                    |
| Specific Gravity                 | D1429-76C/    | D5057-90          |                    |
| Sulfur, Total                    |               | 9056              |                    |
| Synthetic Preparation Leach      |               | 1312              | •                  |
| Paint Filter                     |               | 9095A             | `                  |
| Other: Atrate                    | Method:       | EPA 300.0 (med    | )                  |
| Other:                           | Method        |                   |                    |

## Recra LabNet Philadelphia METHOD REFERENCES AND DATA QUALIFIERS

## **DATA QUALIFIERS**

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- \* = Indicates that the original sample result is greater than 4x the spike amount added.

## **ABBREVIATIONS**

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LC = Laboratory Control Sample.

NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

## ANALYTICAL WET CHEMISTRY METHODS

- 1. ASTM Standard Methods.
- 2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
- 3. <u>Test Methods for Evaluating Solid Waste</u> (USEPA SW-846).
- a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).
- b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).
- c. <u>Method of Soil Analysis</u>, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).
- d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
- e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
- f. Code of Federal Regulations.

L-WI-034/D-6/99

## INORGANICS DATA SUMMARY REPORT 12/04/00

CLIENT: TNUHANFORD B00-068 H1127

RECRA LOT #: 0011L175

|        |         |                    |        |         | REPORTING | DILUTION |
|--------|---------|--------------------|--------|---------|-----------|----------|
| Sample | SITE ID | ANALYTE            | RESULT | UNITS   | LIMIT     | FACTOR   |
|        | ******  | ****************** | ****** |         | ******    | ******   |
| -001   | B10F88  | * Solids           | 89.6   | +       | 0.01      | 1.0      |
|        |         | Nitrate by IC      | 1.4 u  | MG/KG   | 1.4       | 1.0      |
|        |         | Cyanide, Total     | 0.49 u | MG/KG   | 0.49      | 1.0      |
|        |         | pН                 | 9.3    | SOIL PH | 0.01      | 1.0      |
|        |         | Sulfide            | 42.0 u | MG/KG   | 42.0      | 1.0      |
| -002   | B10F89  | % Solids           | 74.9   | •       | 0.01      | 1.0      |
|        |         | Nitrate by IC      | 1.7 u  | MG/KG   | 1.7       | 1.0      |
|        |         | Cyanide, Total     | 0.63 ц | MG/KG   | 0.63      | 1.0      |
|        |         | pН                 | 9.0    | SOIL PH | 0.01      | 1.0      |
|        |         | Sulfide            | 51.0 u | MG/KG   | 51.0      | 1.0      |

#### INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/04/00

CLIENT: TNUHANFORD B00-068 H1127

RECRA LOT #: 0011L175

|         |              |                |        |       | REPORTING | DILUTION |
|---------|--------------|----------------|--------|-------|-----------|----------|
| Sample  | SITE ID      | ANALYTE        | RESULT | UNITS | LIMIT     | PACTOR   |
| ******  |              |                |        |       | ********  |          |
| BLANK10 | 00LXC076-MB1 | Nitrate by IC  | 1.2 u  | MG/KG | 1.2       | 1.0      |
| BLANK1  | 00LC110-MB1  | Cyanide, Total | 0.50 u | MG/KG | 0.50      | 1.0      |
| BLANK10 | 00LSDA52-MB1 | Sulfide        | 40.0 u | MG/KG | 40.0      | 1.0      |

#### INORGANICS ACCURACY REPORT 12/04/00

CLIENT: TNUHANFORD B00-068 H1127

RECRA LOT #: 0011L175

|         |                |                | SPIKED | INITIAL | SPIKED |        | DILUTION     |
|---------|----------------|----------------|--------|---------|--------|--------|--------------|
| SAMPLE  | SITE ID        | ANALYTE        | SAMPLE | RESULT  | AMOUNT | *RECOV | Pactor (SPK) |
|         | ************** |                |        |         |        |        |              |
| -001    | B10P88         | Nitrate by IC  | 27     | 1.4 u   | 28     | 97.3   | 1.0          |
| +002    | B10F89         | Cyanide, Total | 5.8    | 0.63u   | 5.8    | 99.3   | 1.0          |
|         |                | Sulfide        | 478    | 15.3    | 518    | 89.4   | 1.0          |
| BLANK10 | 00LXC076-MB1   | Nitrate by IC  | 25     | 1.2 u   | 25     | 98.5   | 1.0          |
| BLANK10 | 00LSDA52-MB1   | Sulfide        | 377    | 40.0 u  | 421    | 89.5   | 1.0          |
|         |                |                |        |         |        |        |              |

## INORGANICS PRECISION REPORT 12/04/00

CLIENT: TNUHANFORD B00-068 H1127 RECRA LOT #: 0011L175

|         |         |   | INITIAL        |           |      | DILUTION     |
|---------|---------|---|----------------|-----------|------|--------------|
| SAMPLE  | SITE ID | ANALYTE                                 | RESULT         | REPLICATE | RPD  | FACTOR (REP) |
| ***==== |         | *====================================== | ======         |           |      | ~=+=*====    |
| -001REP | B10F88  | % Solids                                | 89.6           | 90.3      | 0.77 | 1.0          |
|         |         | Nitrate by IC                           | 1.4 u          | 1.4 u     | NC   | 1.0          |
| -002REP | B10F89  | Cyanide, Total                          | 0. <b>6</b> 3u | 0.63u     | NC   | 1.0          |
|         |         | рН                                      | 9.0            | 9.2       | 1.9  | 1.0          |
|         |         | Sulfide                                 | 51.0 u         | 46.8 u    | NC   | 1.0          |

#### INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/04/00

CLIENT: TNUHANFORD B00-068 H1127 RECRA LOT #: 0011L175

|        | •            |                    | SPIKED | SPIKED |       |        |
|--------|--------------|--------------------|--------|--------|-------|--------|
| Sample | SITE ID      | ANALYTE            | Sample | AMOUNT | UNITS | *RECOV |
|        |              |                    | *****  |        | ***** |        |
| LCSS1  | 00LC110-LCS1 | Cyanide, Total LCS | 9.9    | 10     | MG/KG | 98.8   |
| LCSS2  | 00LC110-LCS2 | Cyanide, Total LCS | 5.0    | 5.0    | MG/KG | 99.9   |

| PECRA Lab   |                         |                          | Custo          | Ody T         | rans      | sfe<br>EL: C               | r F            | RECE    | ord/l<br>only s                                 | Lab \             | WC<br>ARE | rk<br>as                                     | Re        | equ               | les              | <b>t</b> Pa                 | ge _       |                            | ; <del> </del><br>  |               |          |   | Ri<br>La   | ECRA<br>abNet                             |
|---|-------------------------|--------------------------|----------------|---------------|-----------|----------------------------|----------------|---------|---|-------------------|-----------|--|-----------|-------------------|------------------|-----------------------------|------------|----------------------------|---|---------------|----------|---|--|---|
|   |                         |                          | cd Bo          | 0-04-6        | <u> </u>  | -                          |                | Refrige | rator #   |                   | <u> </u>  | 5  |           |                   |                  | T                           |            | <u>S</u>                   | 1-  | 5             | เร็า     |   |  |   |
| Client  |                         |                          | XO UU          | ع میں۔ ت      | <b>)</b>  |                            |                |         |   | Liquid            |           |  |           |                   |                  |                             |            |                            |   |               |          |   |  |   |
| Est. Final Pro  | ) <b>. Sampi</b><br>つらら | ing Date _<br>`\ ` CY\\  | -001-9         | 999.0         | 0         |                            |                | #/Type  | Container                                       | Solid             | lac       | las  |           |                   |                  |                             |            | lag                        |   | las           | las      |   |  |   |
| Project Conta   |                         |                          |                |               |           |                            |                | Volume  | ,   | Liquid            | 0         |  |           |                   |                  |                             |            | 0                          |   |               |          |   | <del></del>  |   |
| RECRA Proje   | ct Mana                 | <sub>101</sub> <u>a)</u> |                |               |           |                            |                |         |   | Solid             | 450       | <b>≥SO</b>                                   | ļ         |                   |                  | -                           |            | <u> አ</u> 50               | 1-  | 250           | A50      |   | $\dashv$   |   |
| oc Spec   |                         | on Sta                   |                | <u> </u>      | <u>C4</u> |                            |                | Preserv | ratives   |                   |           | OBG  | ANIC      | <u></u>           |                  |                             |            | INC                        | RG  | - 4           | -        |   | $\dashv$   |   |
| Date Rec'd  | 11:7                    | <b>'</b> -00             | Date Due       | 1128-         | <i>∞</i>  |                            |                | ANALY   |   | -                 | δ<br>V    | AN B   | Pest/     | <del>Q</del>      |                  |                             | 1          | Me M                       |   | A H           | £        |   |  |   |
| Account #   | <u> </u>                |                          | <u></u>        | <del></del>   |           | Mat                        | rix            |         |   |                   |           | .1   |           | 1                 |                  | REC                         | RA L       | abNet                      | Use   | Only          |          | ţ                                       |  |   |
| MATRIX<br>CODES:<br>8 - Soil<br>8E - Sediment<br>80 - Soild | Lab<br>ID               |                          | Client ID/Desc | cription      |           | Cho:                       | C<br>sen<br>7) | Metrix  | Date<br>Collected                               | Time<br>Collected | H HOOS    | CLESSH                                       |           |                   |                  |                             |            | RCR9 TO                    | Icnto   | TCDQ3<br>TSFD | TPH      |   |  |   |
| SL - Sludge<br>W - Water                                    | 201                     | BIA                      | F88            |               |           |                            |                | 5       | 1/1/00  | 1040              | ×         | ×  |           | ,                 |                  |                             |            | X                          | /   | X             | ×        |   |  |   |
| A - Air   | ००३                     |                          | F89            |               |           |                            |                | 1       | <del>                                    </del> | 0945              | ×         | X  |           |                   |                  |                             |            | X                          | /   | Х             | X        |   |  |   |
| DS - Drum<br>Solide   |                         | <u>, Dio</u>             | <u> </u>       |               |           |                            |                |         |   |                   |           |  |           |                   |                  |                             |            |                            |   |               |          |   |  |   |
| DL - Drum<br>Liquids<br>L - EP/TCLP                         |                         |                          |                |               |           |                            |                | -       |   |                   |           |  |           |                   |                  |                             |            |                            |   |               |          |   |  | 1   |
| Leachate<br>WI - Wipe                                       |                         | •                        |                |               |           |                            |                |         |   |                   |           |  |           |                   |                  |                             |            |                            |   | <u> </u>      |          |   |  |   |
| X - Other<br>F - Fish                                       |                         |                          |                |               |           |                            |                |         |   |                   |           | <u>                                     </u> | <u></u>   |                   |                  |                             |            |                            | _   |               |          |   |  |   |
| 1 - 1131  |                         |                          |                |               |           |                            |                |         |   |                   |           |  |           |                   |                  |                             |            |                            |   | ļ             | ļ        |   |  | '   |
|   |                         |                          |                |               |           |                            |                |         |   |                   |           |  | <u> </u>  |                   |                  |                             |            |                            | _   | <u> </u>      | ļ        |   |  |   |
|   |                         |                          |                |               |           |                            |                |         |   |                   |           | ļ  | <u> </u>  |                   |                  |                             |            |                            |   |               | <u> </u> |   |  |   |
|   |                         |                          |                |               |           |                            |                |         | <u> </u>  |                   | <u> </u>  |  | <u> </u>  |                   |                  |                             |            |                            |   |               | <u> </u> |   | <u>_</u>   | <u> </u>                                  |
| Special Instruct  | ions:                   | Katu.)                   | , QС           | 8             |           |                            | DATE           |         | 1. Jun<br>2 Was<br>3, Jan<br>4                  |                   |           |  | emi<br>YH | Voa<br>uku        | an.              | aul                         | (من<br>4 م | Ai<br>2)<br>3)<br>CV<br>4) | Shippe<br>and De<br>rbili # _<br>Ambie<br>Receit<br>profition | were:         | or<br>   | 1) Pr<br>Pack<br>2) Ur<br>Pack<br>3) Pr | Tape we resent or age The rese | Outer Or N on Outer or N n Sample Or N on |
| Relinquished by   | Ē                       | Received by              | Dete           | Time<br>CF3SO | CO        | inquis<br>by<br>MP(<br>WAS | DSIT           |         | Received<br>by                                  | ORIG              | ate<br>NA | Tin  | ne        | Sam<br>COC<br>NOT | ples La<br>Recon | es Between bels and d? Y or |            | —<br>5)                    |   | ved With      | r N      |   | Sample<br>(Y   | Present<br>PRec't<br>or N                 |

| Bechte  | l Hanfor   | rd Inc.   |  | CI            | IAIN OF CUST         | ODY/S   | AMPLE           | ANAL  | YSIS  | REQUES  | Γ            |          | B00     | -068-83 | Page 1   | of <u>1</u>   |
|---|------------|---|--|---------------|----------------------|---|-----------------|---|---|---|--------------|----------|---------|---------|----------|---|
| Collector   | My         | <u> </u>  |  | Compa         | ny Contact<br>cekes  | Telepho<br>372-9  | ne No.          |   |   | Project Coordi<br>TRENT, SJ   |              | Pri      | ce Code | 8L      |          | rnaround —  |
| Project Designation<br>200 Area Ground  | water Well | Drilling Waste Designa                                      | tion for   |               | ing Location<br>West |   |                 |   |   | SAF No.<br>B00-068  |              | Air      | Quality |         | 211      | Days<br>———   |
| ice Chest No.   | 1 44       | -068 (1   | 051)   | Field 1<br>EL | ogbook No.           |   | COA<br>JRCRA032 | 00  |   | Method of Ship<br>Fed-EX  | ment         | <u> </u> |         |         |          |   |
| Shipped To  |            | 11-1-00   |  | Offsite       | Property No.         | pφø   | <u>5</u>        |   |   | Bill pf Leding  | Air Bill     | Ne<br>J  | 53      | 03      | 27       | · ·- ·· ·   |
| POSSIBLE SAMI   | PLE HAZA   | RDS/REMARKS   |  |               | Preservation         | Cool 4C   | Cool 4C         | None  | Nor   | e None  |              |          |         |         |          |   |
|   |            |   |  |               | Type of Container    | aG  | aG              | aG  | aC  |   |              |          |         |         |          |   |
|   |            |   |  |               | No. of Container(s)  | '   | 1               |   | '   |   | ļ            |          |         |         |          |   |
| Special Handling  | and/or Sto | rage  |  |               | Volume               | 250mL   | 250mL           | 250mL   | 250s  | nL 250mL  |              |          |         |         |          |   |
|   |            | SAMPLE ANAI   | YSIS   |               |                      | Semi-VOA -<br>8270A (TCL)<br>Semi-VOA -<br>8270A (Add<br>On) {m-<br>Cresol} | ·               | IC Anions -<br>300.0<br>{Nitrate};<br>Sulfides -<br>9030; Total<br>Cyanide - 9010 | ICP Me<br>6010<br>(Superti<br>Mercu<br>7471 - | A 9045<br>race),<br>ry -  | Ti           |          | To:     |         |          |   |
| Sample N  | io.        | Matrix *  | Sam  | ple Date      | Sample Time          |   |                 |   |   |   |              | 13       |         |         |          |   |
| B10F88  |            | SOIL  | 11-C   | <u> </u>      | 1040                 | X   | X               | X   | >   | ×   | B            | ΣY       | WIL     | Soon    | -00-     | 0124  |
|   |            |   |  |               |                      | <b> </b>  |                 |   |   |   |              |          |         |         |          |   |
|   |            |   |  |               |                      | <del> </del>  | <del>- </del>   |   |   | _   | <del> </del> |          |         |         |          |   |
|   |            |   |  |               |                      |   |                 |   |   | <del></del>   |              |          |         |         |          | ,   |
| CHAIN OF P  | OSSESSIO   |   |  | ign/Prin      |                      |   |                 | IAL INSTR   | UCTIO   | ONS   | -            |          |         |         |          | Matrix *  |
| Relinquished By Relinquished By Relinquished By Relinquished By Relinquished By |            | Date/Time Date/Time Date/Time Date/Time Date/Time Date/Time | Received Rec | red By        | RThoren D            | ate/Time Cate/Time ate/Time   | 30<br>b         | Samples s<br>Shipping<br>Collector<br>on //                                       | stored<br>Facilit<br>pot av                   | in Ref.#2B<br>ty on <u>II / I</u><br>ailable to relin<br>2 for shipme | at the 3     | amg      | 1/6/a   |         | ate/Time | S=Soli<br>SE=Scliment<br>SC=Solid<br>S=Slunge<br>W = Water<br>O=Oil<br>A=Air<br>DS=Drum Solids<br>DL=Drum Liquids<br>T=Tissue<br>WI=Wipe<br>L=Liquid<br>V=Vegetation<br>X=Other |
| LABORATORY<br>SECTION   | Keceived B | <del>,</del>  |  |               |                      | <u>.</u>  |                 |   |   |   | _            |          |         |         |          |   |
| FINAL SAMPLE DISPOSITION  | Disposal M | ethod   |  |               |                      |   |                 | Dispo   | sed By  |   |              |          |         | D       | ate/Time | -   |

| Bechte  | el Hanfo         | rd Inc.                               |        | CH  | IAIN OF CU          | STODY/S   | SAMPL   | E ANAL                    | YSIS                | REQUE   | ST                             |          | BO        | 0-068-84     | Page 1     | of <u>1</u>  |
|---|------------------|---------------------------------------|--------|---|---------------------|---|---|---------------------------|---------------------|---|--------------------------------|----------|-----------|--------------|------------|--|
| Collector   | pr               |                                       |        | Compa<br>D W  | ny Contact<br>cekes | Telepho<br>372-9  |   |                           |                     | Project Coo<br>TRENT, SJ  | rdinator                       | Pri      | ice Code  | 8L           |            | ILBALONNG  |
| Project Designation<br>200 Area Ground  | n<br>Iwaler Well | Drilling Waste Designa                |        |   | ng Location<br>West |   |   |                           |                     | SAF No.<br>B00-068  | _                              | Aiı      | r Quality | / []         | 21         | Days   |
| Ice Chest No.   | RC               | 99-01041                              | 1041)  | Field L   | ogbook No.<br> 5/U  |   | COA<br>JRCRA0                                 | 3200                      |                     | Method of S<br>Fed-EX   | hipment                        | 1        |           |              |            |  |
| Shipped To<br>TMTA/RECRA  |                  | 00-1-11                               | 1      | Offsite   | Property No.        | \$10¢   | ø5  |                           | 1                   | Bill of Lad   | PE/Air Bill                    |          | 95        | <u>3</u> 6   | 32         |  |
| POSSIBLE SAM  | PLE HAZA         | ARDS/REMARKS                          |        |   | Preservation        | Cool 4C   | Cool 4C                                       | None                      | Non                 | ie None   |                                |          | •         |              |            |  |
|   |                  |                                       | -      | . [   | Type of Containe    | er aG   | aG  | аG                        | aG                  | a G   |                                |          |           |              |            |  |
|   |                  |                                       |        |   | No. of Container(   |   | l   | 1                         | 1                   |   |                                |          |           |              |            |  |
| Special Handling  | and/or Sto       | rage                                  |        |   | Volume              | 250mL   | 250mL   | 250mL                     | 250n                | nL 250m.  | ۱ ا                            |          |           |              |            |  |
|   |                  | SAMPLE ANAI                           |        | Semi-VOA -<br>8270A (TCL)<br>Semi-VOA -<br>8270A (Add<br>On) {m-<br>Cresof} | (TCL)               | A IC Anions -<br>300.0<br>{Nitrate};<br>Sulfides -<br>9030; Total<br>Cyanide - 9010 | ICP Me<br>6010<br>(Superti<br>Merca<br>7471 - | A 9045<br>race);<br>ry -  | Ti                  |   | To:                            |          |           |              |            |  |
| Sample N  | ło.              | Matrix *                              | Sample | Date  | Sample Tim          |   | No.   |                           |                     |   |                                |          |           |              |            |  |
| B10F89  |                  | SOIL                                  | 11-0   | 1-0   | 0 0445              | X   | X   | X                         |                     | <u> </u>  |                                | ΟŸ       | W)7       | 3000         | -00-       | 0160   |
| <u> </u>  |                  | · · · · · · · · · · · · · · · · · · · |        | _   |                     | _   | -   |                           | _                   | _   |                                | $\dashv$ |           |              |            | -  |
| <u> </u>  |                  | <u> </u>                              |        |   |                     | <del></del> -   | -   | <del> </del>              |                     | <del> </del>  | -                              |          |           | <del> </del> |            |  |
|   |                  |                                       |        |   |                     | 1   | 1   |                           |                     | _   |                                |          |           |              | _          | · ·  |
| CHAIN OF P  | OSSESSIO         |                                       |        | n/Print   |                     |   |   | CIAL INSTE                | EUCTIO              | ONS   |                                |          |           |              |            | Matrix *   |
| Relinquished By  Relinquished By  Received By |                  |                                       |        |   |                     | Date/Time  Date/Time  Date/Time  Date/Time  Date/Time                               | 50<br>10                                      | Shipping I<br>Collector 1 | facility<br>not ava | n Ref.# <u>DC</u><br>on <u>p / /</u><br>ilable to rel<br>Dfor shipm | / <u>_127_</u> )<br>inquish sa |          | PT-       | D            | .te/Time   | S=Soli<br>SE=Sodiment<br>SO=Solid<br>SO=Solid<br>S=Solid<br>W = Water<br>O=Oil<br>A=Air<br>DS=Drum Solids<br>DL=Drum Liquids<br>T=Tisens<br>W1=Wipe<br>L=Liquid<br>V=Vegstation<br>X=Other |
| LABORATORY<br>SECTION   | Received By      |                                       |        |   | _                   |   | <b>.</b>                                      |                           |                     |   |                                |          | _         |              | ite/ I IME |  |
| FINAL SAMPLE DISPOSITION  | Disposal Mo      | ethod                                 |        |   |                     |   |   | Dispo                     | sed By              |   |                                |          |           | D            | ate/Time   |  |



# Recra LabNet - Lionville Laboratory INORGANIC ANALYTICAL DATA PACKAGE FOR TNUHANFORD B00-068 H1127

DATE RECEIVED: 11/07/00 RFW LOT # :0011L175

| CLIENT ID /ANALYSIS | RFW #   | MTX | PREP #  | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------------|---------|-----|---------|------------|-----------|----------|
| B10F88              |         |     |         |            |           |          |
| SILVER, TOTAL       | 001     | s   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| SILVER, TOTAL       | 001 REP | S   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| SILVER, TOTAL       | 001 MS  | S   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| ARSENIC, TOTAL      | 001     | S   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| ARSENIC, TOTAL      | 001 REP | S   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| ARSENIC, TOTAL      | 001 MS  | S   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| BARIUM, TOTAL       | 001     | S   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| BARIUM, TOTAL       | 001 REP | S   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| BARIUM, TOTAL       | 001 MS  | S   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| CADMIUM, TOTAL      | 001     | s   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| CADMIUM, TOTAL      | 001 REP | S   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| CADMIUM, TOTAL      | 001 MS  | s   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| CHROMIUM, TOTAL     | 001     | S   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| CHROMIUM, TOTAL     | 001 REP | S   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| CHROMIUM, TOTAL     | 001 MS  | S   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| MERCURY, TOTAL      | 001     | S   | 00C0399 | 11/01/00   | 11/29/00  | 11/29/00 |
| MERCURY, TOTAL      | 001 REP | S   | 00C0399 | 11/01/00   | 11/29/00  | 11/29/00 |
| MERCURY, TOTAL      | 001 MS  | S   | 00C0399 | 11/01/00   | 11/29/00  | 11/29/00 |
| LEAD, TOTAL         | 001     | S   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| LEAD, TOTAL         | 001 REP | S   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| LEAD, TOTAL         | 001 MS  | S   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| SELENIUM, TOTAL     | 001     | S   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| SELENIUM, TOTAL     | 001 REP | S   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| SELENIUM, TOTAL     | 001 MS  | S   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| B10F89              |         |     |         |            |           |          |
| SILVER, TOTAL       | 002     | s   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| ARSENIC, TOTAL      | 002     | s   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| BARIUM, TOTAL       | 002     | S   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| CADMIUM, TOTAL      | 002     | S   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| CHROMIUM, TOTAL     | 002     | S   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| MERCURY, TOTAL      | 002     | S   | 00C0399 | 11/01/00   | 11/29/00  | 11/29/00 |
| LEAD, TOTAL         | 002     | S   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
| SELENIUM, TOTAL     | 002     | S   | 99L1732 | 11/01/00   | 11/21/00  | 11/24/00 |
|                     |         |     |         |            |           |          |

LAB QC:

# Recra LabNet - Lionville Laboratory INORGANIC ANALYTICAL DATA PACKAGE FOR TNUHANFORD B00-068 H1127

DATE RECEIVED: 11/07/00 RFW LOT # :0011L175

| CLIENT ID /ANALYSIS | RFW #  | MTX | PREP #  | COLLECTION | EXTR/PREP | ANALYSIS |
|---------------------|--------|-----|---------|------------|-----------|----------|
|                     |        |     |         |            |           |          |
| SILVER LABORATORY   | LC1 BS | S   | 99L1732 | N/A        | 11/21/00  | 11/24/00 |
| SILVER, TOTAL       | MB1    | S   | 99L1732 | N/A        | 11/21/00  | 11/24/00 |
| ARSENIC LABORATORY  | LC1 BS | S   | 99L1732 | N/A        | 11/21/00  | 11/24/00 |
| ARSENIC, TOTAL      | MBl    | S   | 99L1732 | N/A        | 11/21/00  | 11/24/00 |
| BARIUM LABORATORY   | LC1 BS | S   | 99L1732 | N/A        | 11/21/00  | 11/24/00 |
| BARIUM, TOTAL       | MB1    | S   | 99L1732 | N/A        | 11/21/00  | 11/24/00 |
| CADMIUM LABORATORY  | LC1 BS | S   | 99L1732 | A/N        | 11/21/00  | 11/24/00 |
| CADMIUM, TOTAL      | MB1    | S   | 99L1732 | N/A        | 11/21/00  | 11/24/00 |
| CHROMIUM LABORATORY | LC1 BS | S   | 99L1732 | N/A        | 11/21/00  | 11/24/00 |
| CHROMIUM, TOTAL     | MB1    | S   | 99L1732 | N/A        | 11/21/00  | 11/24/00 |
| MERCURY LABORATORY  | LC1 BS | S   | 00C0399 | N/A        | 11/29/00  | 11/29/00 |
| MERCURY, TOTAL      | MB1    | S   | 00C0399 | N/A        | 11/29/00  | 11/29/00 |
| LEAD LABORATORY     | LC1 BS | S   | 9911732 | N/A        | 11/21/00  | 11/24/00 |
| LEAD, TOTAL         | MB1    | S   | 99L1732 | N/A        | 11/21/00  | 11/24/00 |
| SELENIUM LABORATORY | LC1 BS | S   | 99L1732 | N/A        | 11/21/00  | 11/24/00 |
| SELENIUM, TOTAL     | MB1    | S   | 99L1732 | N/A        | 11/21/00  | 11/24/00 |



Chemical and Environmental Measurement Information

## Recra LabNet Philadelphia Analytical Report

Client: TNU-HANFORD B00-068

W.O.#: 10985-001-001-9999-00

**RFW#:** 0011L175

Date Received: 11-07-00

SDG/SAF#: H1127/B00-068

#### METALS CASE NARRATIVE

1. This narrative covers the analyses of 2 solid samples.

- 2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
- 3. All analyses were performed within the required holding times.
- 4. The cooler temperature has been recorded on the Chain of Custody.
- 5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
- 6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
- 7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
- 8. All ICP Interference Check Standards were within control limits.
- 9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to form 7.
- 10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.
- 11. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of pages.

- 12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.
- 13. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

J. Michael Taylor

VP, Laboratory General Manager Lionville Laboratory

gmb/m11-175



## METALS METHOD GLOSSARY

| D 1                      | nods are used as reference            | ce for the digestion a            | and analysis of  | samples conta | nined within this                      |
|--------------------------|---------------------------------------|-----------------------------------|------------------|---------------|--|
| 0                        | 0114175                               | -                                 |                  |               |  |
| Leaching Procedur        | re:13101311131                        | 12Other:                          |                  |               |  |
| CLP Metals Dig           | gestion and Analysis M                | lethods:ILM03.0                   | _ILM04.0         | •             |  |
| Metals Digestion M       | 1ethods:3005A30                       | 10A _3015 _302                    | 0A \square 3050B | 3051200       | 0.7 _SS17                              |
|                          | Other:                                |                                   |                  |               |  |
|                          | Me                                    | etals Analysis Met                | thods            |               |  |
|                          |                                       |                                   |                  | EPA           | ************************************** |
|                          | SW846                                 | EPA                               | STD MTD          | OSWR          | USATHAMA                               |
| Aluminum                 | 6010B                                 | 200.7                             |                  |               | 99                                     |
| Antimony                 | _6010B _7041 <sup>5</sup>             | 200.7204.2                        |                  |               | 99                                     |
| Arsenic                  | <u>∠</u> 6010B7060A ⁵                 | 200.7206.2                        | 3113B            |               | _99                                    |
| Barium                   | <b>∠6010B</b>                         | 200.7                             |                  |               | 99                                     |
| Beryllium                | 6010B                                 | 200.7                             |                  | 1.600         | _99                                    |
| Bismuth                  | _6010B <sup>1</sup>                   | _200.7 1                          |                  | 1620          | 99                                     |
| Boron                    | 6010B                                 | _200.7                            |                  |               | 99<br>99                               |
| Cadmium                  | <u>∠6010B</u> _7131A <sup>6</sup>     | 200.7213.2                        |                  |               | <sup>99</sup>                          |
| Calcium                  | 6010B                                 | 200.7                             |                  |               |  |
| Chromium                 | 6010B7191 <sup>5</sup>                | _200.7 _218.2                     |                  |               | SS1 /<br>99                            |
| Cobalt                   | _6010B                                | 200.7                             |                  |               | <del>99</del>                          |
| Copper                   | 6010B7211 <sup>5</sup>                | 200.7220.2                        |                  |               | <del>22</del><br>99                    |
| lron                     | 6010B                                 | 200.7                             | 21120            |               | <sup>23</sup>                          |
| Lead                     | <b>∠6010B _7421</b> <sup>5</sup>      | 200.7239.2                        | 3113B            | 1/20          | <del>99</del>                          |
| Lithium                  | _6010B _7430 4                        | 200.7                             |                  | 1620          |  |
| Magnesium                | _6010B                                | 200.7                             |                  |               | <del>99</del>                          |
| Manganese                | _6010B                                | 200.7                             |                  |               |  |
| Mercury                  | 7470A <sup>3</sup> 7471A <sup>3</sup> |                                   |                  |               | <b>—</b> 99                            |
| Molybdenum               | 6010B                                 | 200.7                             |                  |               |  |
| Nickel                   | _6010B                                | 200.7<br>200.7 258.1 <sup>4</sup> |                  |               | <u></u>                                |
| Potassium<br>Dana Faatha | 6010B7610 <sup>4</sup>                | 200.7258.1 <sup>4</sup>           |                  | 1620          |  |
| Rare Earths              | <b>—</b>                              | _                                 | 3113B            | 1020          | 99                                     |
| Selenium                 | ∠6010B7740 <sup>5</sup><br>6010B ¹    | 200.7270.2<br>200.7               | 31136            | 1620          | <b>—</b> 99                            |
| Silicon                  | 6010B                                 |                                   |                  | 1620          |  |
| Silica                   | 6010B 7761 5                          |                                   |                  | 1020          |  |
| Silver                   | 6010B                                 | 200.7272.2                        |                  |               | <b>-</b> 99                            |
| Sodium                   | 6010B///0                             | 200.7                             |                  |               |  |
| Strontium<br>Thallium    | 6010B 7841 <sup>5</sup>               |                                   | 200.9            |               | <u> </u>                               |
|                          |                                       | <u></u>                           | 200.7            |               |  |
| Tin<br>Titonium          | 6010B                                 | 200.7<br>200.7                    |                  |               | 99                                     |
| Titanium                 | 6010B <sup>1</sup>                    | 200.7                             |                  | 1620          | 99                                     |
| Uranium                  |                                       |                                   |                  |               |  |
| Vanadium<br>7:           | 6010B                                 |                                   |                  |               | <del></del> /99                        |
| Zinc                     | 6010B                                 | 200.7<br>200.7 ¹                  |                  | 1620          | <b>—</b> // <sub>99</sub>              |
| Zirconium                | 6010B ¹                               |                                   |                  | 1020          |  |
| Other:                   | Meth                                  | ıod:                              |                  |               |  |

L-WI-033/M-11/99

## METHOD REFERENCES AND DATA QUALIFIERS

## **DATA QUALIFIERS**

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- \* = Indicates that the original sample result is greater than 4x the spike amount added.

## **ABBREVIATIONS**

MB = Method or Preparation Blank.

MS. = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LCS = Laboratory Control Sample.

NC = Not calculated.

## **ANALYTICAL METAL METHODS**

- 1. Not included in the method element list.
- 2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).
- 3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
- 4. Flame AA.
- 5. Graphite Furnace AA.

RFW 21-21L-033/N-10/96

## INORGANICS DATA SUMMARY REPORT 11/30/00

CLIENT: TNUHANFORD B00-068 H1127 RECRA LOT #: 0011L175

|        |                |                 |        |       | REPORTING | DILUTION |
|--------|----------------|-----------------|--------|-------|-----------|----------|
| SAMPLE | SITE ID        | ANALYTE         | result | UNITS | LIMIT     | FACTOR   |
| *****  | ************** | ******          | ****** |       |           |          |
| -001   | B10F88         | Silver, Total   | 0.11 u | MG/KG | 0.11      | 1.0      |
|        |                | Arsenic, Total  | 8.2    | MG/KG | 0.25      | 1.0      |
|        |                | Barium, Total   | 77.9   | MG/KG | 0.02      | 1.0      |
|        |                | Cadmium, Total  | 0.11   | MG/KG | 0.03      | 1.0      |
|        |                | Chromium, Total | 7.7    | MG/KG | 0.06      | 1.0      |
|        |                | Mercury, Total  | 0.02 u | MG/KG | 0.02      | 1.0      |
|        |                | Lead, Total     | 7.4    | MG/KG | 0.22      | 1.0      |
|        |                | Selenium, Total | 0.34 u | MG/KG | 0.34      | 1.0      |
| -002   | B10P89         | Silver, Total   | 0.20   | MG/KG | 0.13      | 1.0      |
|        |                | Arsenic, Total  | 1.2    | MG/KG | 0.29      | 1.0      |
|        |                | Barium, Total   | 60.0   | MG/KG | 0.02      | 1.0      |
|        |                | Cadmium, Total  | 0.07   | MG/KG | 0.04      | 1.0      |
|        |                | Chromium, Total | 34.1   | MG/KG | 0.07      | 1.0      |
|        |                | Mercury, Total  | 0.02 u | MG/KG | 0.02      | 1.0      |
|        |                | Lead, Total     | 6.0    | MG/KG | 0.26      | 1.0      |
|        |                | Selenium, Total | 0.40 u | MG/KG | 0.40      | 1.0      |

## INORGANICS METHOD BLANK DATA SUMMARY PAGE 11/30/00

CLIENT: TNUHANFORD B00-068 H1127 RECRA LOT #: 0011L175

|        |             |                 |         |       | RBPORTING | DILUTION |
|--------|-------------|-----------------|---------|-------|-----------|----------|
| SAMPLE | SITE ID     | ANALYTE         | RESULT  | UNITS | LIMIT     | FACTOR   |
|        |             |                 |         | ***** |           |          |
| BLANK1 | 99L1732-MB1 | Silver, Total   | 0.11 u  | NG/KG | 0.11      | 1.0      |
|        |             | Arsenic, Total  | 0.24 u  | MG/KG | 0.24      | 1.0      |
|        |             | Barium, Total   | 0.03    | MG/KG | 0.02      | 1.0      |
|        |             | Cadmium, Total  | 0.03 u  | MG/KG | 0.03      | 1.0      |
|        |             | Chromium, Total | 0.11    | MG/KG | 0.06      | 1.0      |
|        |             | Lead, Total     | 0.21 u  | MG/KG | 0.21      | 1.0      |
|        |             | Selenium, Total | 0.33 u  | MG/KG | 0.33      | 1.0      |
|        |             |                 |         |       |           |          |
| BLANK1 | 00C0399-MB1 | Mercury, Total  | 0.02, u | MG/KG | 0.02      | 1.0      |

#### INORGANICS ACCURACY REPORT 11/30/00

CLIENT: TNUHANFORD B00-068 H1127 RECRA LOT #: 0011L175

|        |         |                 | SPIKED | INITIAL | SPIKED |        | DILUTION     |
|--------|---------|-----------------|--------|---------|--------|--------|--------------|
| SAMPLE | SITE ID | ANALYTE         | Sample | RESULT  | AMOUNT | *RECOV | FACTOR (SPK) |
|        | ******  |                 |        | ******  |        |        | ******       |
| -001   | B10F88  | Silver, Total   | 5.1    | 0.11u   | 5.2    | 98.1   | 1.0          |
|        |         | Arsenic, Total  | 206    | 8.2     | 209    | 94.8   | 1.0          |
|        |         | Barium, Total   | 276    | 77.9    | 209    | 95.2   | 1.0          |
|        |         | Cadmium, Total  | 5.0    | 0.11    | 5.2    | 94.0   | 1.0          |
|        |         | Chromium, Total | 27.8   | 7.7     | 20.9   | 96.2   | 1.0          |
|        |         | Mercury, Total  | 0.17   | 0.02u   | 0.17   | 7 97.7 | 1.0          |
|        |         | Lead, Total     | 57.1   | 7.4     | 52.2   | 95.2   | 1.0          |
|        |         | Selenium, Total | 197    | 0.34u   | 209    | 94.5   | 1.0          |

#### INORGANICS PRECISION REPORT 11/30/00

CLIENT: TNUHANFORD B00-068 H1127 RECRA LOT #: 0011L175

|         |   |                  | INITIAL |           |      | DILUTION     |
|---------|---|------------------|---------|-----------|------|--------------|
| SAMPLE  | SITE ID                                 | ANALYTE          | RESULT  | REPLICATE | RPD  | FACTOR (REP) |
|         | *************************************** | **************** | ******* | ******    |      | ******       |
| -001RBP | B10P88                                  | Silver, Total    | 0.11u   | 0.11u     | NC   | 1.0          |
|         |   | Arsenic, Total   | 8.2     | 8.2       | 0.00 | 1.0          |
|         |   | Barium, Total    | 77.9    | 80.4      | 3.2  | 1.0          |
|         |   | Cadmium, Total   | 0.11    | 0.13      | 17.0 | 1.0          |
|         |   | Chromium, Total  | 7.7     | 7.3       | 5.3  | 1.0          |
|         |   | Mercury, Total   | 0.021   | 0.02u     | NC   | 1.0          |
|         |   | Lead, Total      | 7.4     | 7.4       | 0.00 | 1.0          |
|         |   | Selenium, Total  | 0.34u   | 0.34u     | NC   | 1.0          |

## INORGANICS LABORATORY CONTROL STANDARDS REPORT 11/30/00

CLIENT: TNUHAMFORD B00-068 H1127 RECRA LOT #: 0011L175

|        |             |               | SPIKED | SPIKED |       |        |
|--------|-------------|---------------|--------|--------|-------|--------|
| SAMPLE | SITE ID     | ANALYTE       | SAMPLE | AMOUNT | UNITS | *RECOV |
| ****** | **********  | ********      | *****  | *****  |       |        |
| LCS1   | 99L1732-LC1 | Silver, LCS   | 49.3   | 50.0   | MG/KG | 98.6   |
|        |             | Arsenic, LCS  | 955    | 1000   | MG/KG | 95.5   |
|        |             | Barium, LCS   | 491    | 500    | MG/KG | 98.2   |
|        |             | Cadmium, LCS  | 24.6   | 25.0   | MG/KG | 98.4   |
|        |             | Chromium, LCS | 49.5   | 50.0   | MG/KG | 99.0   |
|        | • •         | Lead, LCS     | 243    | 250    | MG/KG | 97.3   |
|        |             | Selenium, LCS | 938    | 1000   | MG/KG | 93.8   |
| LCS1   | 00C0399-LC1 | Mercury, LCS  | 0.64   | 0.7    | MG/KG | 89.5   |

| HECHA Lab   |                 |            | Cu            | Stoa         | y Irai<br>PERSON | 15 I         | eri          | nec<br>Mere    | OHUA                     | LAN               | AA C       | VG<br>VIL                                    | nt   | ;qu      | 162              | L Pa                | ige_         | <u>'</u> 0              | t                 | -                   |                        |               | N H               | (EC<br>.ab\          | H<br>V   |
|---|-----------------|------------|---------------|--------------|------------------|--------------|--------------|----------------|--------------------------|-------------------|------------|--|--|----------|------------------|---------------------|--------------|-------------------------|-------------------|---------------------|------------------------|---------------|-------------------|----------------------|----------|
| 0011  | <u>L1</u>       | 75         | AU            | FIELL        | PERSUR           | VEL:         | COMI         | PLEIG          | ONLIS                    | NAUEO             | Ans.       | E.   |  |          |                  |                     |              | C-                      | 1-                | -D                  |                        |               | <b>,</b> -        | avi                  | 71       |
| Client  | <b>7</b>        | - Home     | Cood 3        | P-00-0       | Y 08             |              |              | Refrige        | erator #                 |                   | ĺ          | 15   |  |          |                  |                     |              | S                       | 1-                | 5                   | <u>S</u>               | $\Box$        | $\Box$            |                      |          |
| Est. Final Pro  | _               |            |               |              |                  | -            |              |                |                          | Liquid            |            |  |  |          |                  |                     |              |                         |                   |                     |                        |               |                   |                      |          |
| Project #   | 7. <b>38</b> 11 | Ser - Care | 11-001        | -9999        | 9.00             |              |              | #/Type         | Container                | Solid             | las        | las  | Ι.   |          |                  |                     |              | las                     | )                 | lac                 | las                    |               |                   |                      | _        |
| Project Conta   |                 |            |               |              |                  |              |              | Volume         |                          | Liquid            | 0          | - 0  | <u>'</u>                                     |          |                  |                     |              | 0                       | ja                | 0                   | 0                      |               |                   |                      |          |
| RECRA Proje   | ct Ma           | nacior Q   | 7             |              |                  |              |              | YOUNK          |                          | Solid             | 450        | RSO  |  |          |                  |                     |              | <u>250</u>              | 1                 | 250                 | A50                    |               |                   |                      |          |
| oc Socc   |                 | Del S      | td t          | ATC          | 1 day            |              | Preserv      | vatives        |                          |                   | <u> </u>   | <u> </u>                                     | <u>.                                    </u> |          |                  |                     | INORG 18 9   |                         |                   |                     |                        |               |                   | _                    |          |
| Date Rec'd  |                 |            |               |              | 28-00            |              |              | ANALY<br>REQUE |                          | <b>-&gt;</b>      | δ          | _  | P Set  | Herb     |                  |                     | ļ            | Metal<br>Solia<br>Solia | -                 | Aniga               | £                      |               |                   |                      |          |
| Account #   | <u> </u>        | 1          | <del></del> _ |              |                  | 140          | etrix        |                | T                        | T                 | 1          | 1  | 1  | 1        |                  | REC                 |              |                         | Use               | Only                |                        | 1             |                   |                      | _        |
| MATRIX<br>CODES:<br>S - Soll<br>SE - Sediment<br>SO - Solid | Lab<br>ID       |            | Client ID     | /Description | n                | Ch           | osen<br>v)   | Matrix         | Date<br>Collected        | Time<br>Collected | SORAH<br>H | HSZ  |  |          |                  |                     |              | RCPATO                  | TCnTo             | TCna3<br>TSFD       | TPH                    |               |                   |                      |          |
| St Sludge   |                 |            | = 0.0         |              |                  | MS           | MSD          | -              | 10/                      | 1-10              |            | א<br>א                                       | <del> </del>                                 |          |                  |                     |              | X                       | 1.5               |                     |                        |               | -                 | $\rightarrow$        | _        |
|   | 201             |            | 0F88          |              | <u> </u>         | <del> </del> | <b> </b>     | 5              | 71/00                    | 1040              |            | +  | ├─-  |          |                  |                     |              | -                       |                   | X                   | X                      | $\rightarrow$ | $\dashv$          | $\dashv$             |          |
| A - Air<br>DS - Drum  | <u> </u>        | A BIC      | 5 F89         | <u> </u>     |                  | —            | <del> </del> | Џ_             | <del> </del>             | 0945              | ×          | X  | -  |          |                  |                     |              | ×                       |                   | Х                   | ×                      | $\dashv$      | $\dashv$          | $\dashv$             | _        |
| Solids<br>DL - Drum   |                 |            |               |              |                  |              | <u> </u>     |                | <u> </u>                 |                   |            | $\vdash$                                     | ļ  |          |                  |                     |              |                         |                   | -                   | $\vdash$               |               |                   | ╼╁                   | _        |
| Liquida<br>L - EP/TCLP                                      |                 | _          |               |              |                  |              | <b> </b>     |                | <del> </del>             |                   |            | ├  |  |          |                  |                     |              |                         | <u> </u>          | <b></b>             | $\longmapsto$          |               |                   | $\longrightarrow$    | _        |
| Leachate<br>WI - Wipe                                       |                 |            | <del> </del>  |              |                  | <u> </u>     | ļ            |                | ļ                        | ļ                 |            | <u> </u>                                     | ļ <u>.</u>                                   |          |                  |                     |              |                         | <del></del>       |                     | <b> </b>               | $\rightarrow$ | $\longrightarrow$ |                      |          |
| X - Other<br>F - Fish                                       |                 |            |               |              | <del>.,</del>    | <u> </u>     | <b> </b>     | <u> </u>       | <b> </b> -               | -                 |            | ļ  | ļ  |          |                  |                     | _            |                         | <u> </u>          |                     | $\vdash \vdash \vdash$ |               | <del></del>       |                      | _        |
|   |                 |            |               |              |                  | <del> </del> | <u> </u>     | ļ              | <b> </b>                 |                   |            | <b> </b>                                     |  |          |                  |                     | _            |                         | <u> </u>          |                     |                        |               |                   |                      | <u>.</u> |
|   |                 |            |               |              |                  | <u> </u>     | <b> </b>     | ļ              | <u> </u>                 |                   |            | <b> </b>                                     | <u> </u>                                     |          |                  |                     |              |                         | <u> </u>          |                     | $\longmapsto$          |               |                   |                      |          |
|   |                 |            |               |              |                  | <u> </u>     | <u> </u>     | ļ              | <u> </u>                 |                   |            | <u> </u>                                     | <u> </u>                                     |          |                  |                     |              |                         |                   |                     |                        |               |                   |                      | _        |
|   |                 |            |               |              |                  |              |              | <u> </u>       | <u> </u>                 | ł                 |            |  | <u> </u>                                     |          |                  |                     |              |                         |                   |                     |                        |               |                   |                      | _        |
| Special Instructi   | ions:           | Sof        | 900-0         | ر ا          |                  |              | DATE/        | REVISION       | NS: 1                    | 00.#C             | なる         | 15   | emi.   | Voc      | <b>∕</b> • •     | °() ~               | أمنا         | <u> </u>                |                   |                     | _                      | Net Use       | Only              |                      |          |
| Special Instructi   |                 |            |               |              |                  |              |              |                | 1)<br>1)<br>2( )<br>2( ) | 1000              |            | $\overline{\Omega}$                          | ب ا  | ale i    | 1.0.1 <u>.5.</u> |                     | d            | Sa<br>1)                | mples :<br>Shippe | were:               | or                     |               | Tape v            | was:<br>on Oute      | af       |
| , you   | 1               | atri       | x Q           | C            |                  |              |              | <del></del> '  | 3,DOM                    | رجعي              |            |  | _U.  | <u> </u> | -                | <u>~~~</u>          | <u></u>      | Ha                      |                   | vered _             |                        |               | _                 | りor ト                |          |
| (lu i   | •               | 1 (011)    | .,,           | _            |                  |              |              |                | 3 / DOM                  | -non-             | PKI        | •  |  |          |                  |                     |              |                         |                   |                     |                        |               |                   | on Out               |          |
|   |                 |            |               |              |                  |              |              | ·              | 4                        |                   |            |  |  |          |                  |                     |              |                         |                   | or Co               |                        | 3) Pr         | esent c           | on Samp<br>Por (     | ple      |
|   |                 |            |               |              |                  |              |              |                | 5                        |                   |            |  |  |          |                  |                     | <del>-</del> | Ç                       | nomicon           | or in Grandicate    | (N)                    | 4) I le       | nbroken           |                      | IN       |
|   |                 |            |               |              |                  |              |              |                | 6                        |                   |            |  | -01  |          | •                |                     |              | 4)<br>Pn                | Labels            | indicate<br>reserve | )<br>ort               |               |                   | or N                 |          |
| Relinquished  | Т               | Received   | D=            | ate Ti       | me Re            | lingul       | shed         |                | Received                 | В                 | ate        | Tim  | •  | Discre   | pancie           | s Betwe             | en           | _ `"                    |                   | 0 %                 |                        |               |                   | d Preser<br>le Rec'i |          |
| by  | +               | by         |               |              |                  | by           |              | _              | by                       |                   |            |  |  | Samp     | les Lat          | pels and<br>I? Y or | _            |                         | Receive           | od Withi            | in                     |               | Q                 |                      |          |
| Perex   | 4               | Digwi      | 77            | loo ca:      | 30 C             |              | OSIT         | 4              |                          | <del>OR</del> IG( | NAI        | <u>.                                    </u> |  | NOTE     | S:               |                     | 9            | ,                       | y 11              | Öor                 | N                      | Coole<br>Temp |                   | <i>O</i> , ,         | С        |
|   |                 |            |               |              |                  | WAS          | STE          | ļ              |                          | SEMP!             |            |  |  | 4235     | 7954 8           | <b>3</b> 27         |              |                         |                   | _                   |                        |               |                   |                      |          |

| Bechtel  | Hanfor      | d Inc.                  |   | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST |                                   |   |                      |   |   |  |  | B00-068-83      |               |      | Page <u>I</u> | of <u>1</u>  |
|--|-------------|-------------------------|---|--|-----------------------------------|---|----------------------|---|---|--|--|-----------------|---------------|------|---------------|--|
| Collector M  | MAL         | ,                       | Con   | upany Contact<br>Weekes                  |                                   | Telephor<br>372-95  | ne No.<br>524        |   |   | Project C<br>TRENT, S  | oordinator<br>J                            | Pri             | ice Code      | 8L   |               | rnaround   |
| Project Designation<br>200 Area Groundy                          |             | Drilling Waste Designat |   | pling Location<br>00 West                |                                   |   |                      |   |   | SAF No.<br>B00-068   |  | Air             | Quality       |      | 21            | Days<br>———  |
| Ice Chest No.  | C 44        | -068 (1                 |   | ld Logbook No.<br>L                      |                                   |   | COA<br>JRCRA03       | 200   |   | Fed-EX   |  |                 |               |      |               | ·  |
| Shipped To   |             | 11-1-00                 | om  | site Property No                         | 101C                              | OPP   | <u>5</u>             | ·•  |   | <b>MU</b> '2   | ding/Air Bill                              | <u> </u>        | 53            | 03   | 27            |  |
| POSSIBLE SAMP  | PLE HAZA    | RDS/REMARKS             |   | Preservat                                | tion                              | Cool 4C   | Cool 4C              | None  | Non   | ĺ  | l  |                 |               |      |               |  |
|  |             |                         |   | Type of Con                              | tainer                            | aG  | ₽G                   | aG  | aC  |  | 3  | T               |               |      |               | <del> </del>   |
|  |             |                         |   | No. of Conta                             | iner(s)                           | 1   | 1                    |   | 1   | '  |  |                 | , <del></del> |      |               |  |
| Special Handling a   | and/or Stor | rage                    |   | Volume                                   | e                                 | 250mL   | 250mL                | 250mL   | 250n  | nL 250   | mL .                                       |                 |               |      |               |  |
|  |             | SAMPLE ANAL             | YŠIS  | ., I                                     |                                   | Semi-VOA -<br>\$270A (TCL);<br>Semi-VOA<br>\$270A (Add-<br>On) (m-<br>Cresol)   | VOA - 8260A<br>(TCL) | IC Anions -<br>300.0<br>[Nitrate];<br>Sulfides -<br>9030; Total<br>Cyanide - 9010 | ICP Me<br>6010<br>(Supertr<br>Mercu<br>7471 - ( | A 904<br>race);<br>ry -  | 15   |                 | To:           |      |               |  |
| Sample No  | 0.          | Matrix *                | Sample Da                                       | te Sample                                | Time                              |   |                      |   |   |  |  |                 |               |      |               |  |
| B10F88   |             | SOIL                    | 11-01-0   | 2 ROAK                                   | )                                 | _X_   | X                    | Χ_  | ×   | <u> </u>   | B  | OΥ              | WILL          | Stan | -00-          | 0154   |
|  |             |                         | <u> </u>  |  | <del></del> -{                    |   |                      |   |   |  |  | <del>-</del> -{ |               |      |               | 1  |
|  |             |                         |   |  |                                   |   |                      | <u> </u>  |   |  |  | 7               |               |      |               |  |
|  |             |                         |   |  |                                   |   |                      |   |   |  |  |                 |               |      |               |  |
| $\mathbf{K}$ $\mathbf{A}$ $\mathbf{A}$ $\mathbf{B}$ $\mathbf{B}$ | 27ho        | Date/Time 15-5          | Received By Received By Received By Received By | Day<br>man 1                             | # 213<br>P 1 Date<br>Date<br>7 00 | e/Time   S e/Time   O | 30                   | Samples a   | davad 1   | in Das #   | B at the 3<br>T 100.<br>relinquish soment. | 728             |               |      |               | Matrix * S-Soil SE-Sediment SO-Solid S = Studge W = Water O=Oil A=Alar DS-Drum Solids DL-Drum Liquids T-Tissue Wi-Wige L-Liquid V-Vegetation X=Other |
| Relinquished By  |             | Date/Time               | Received By                                     |  |                                   | e/Time  | _                    | on  | 1 C   | of the state of th | rennquish s<br>iment.                      |                 | 16/Q          | )    |               |  |
| LABORATORY SECTION   | Received By |                         |   |  |                                   | Tiel  | le                   | · · · · · · · · · · · · · · · · · · ·   |   | <del>-</del> ,   |  |                 | <u>*</u>      | Di   | ate/Time      |  |
|  | Disposal Me | thod                    |   | <u> </u>                                 | •                                 |   |                      | Dispo   | sed By  |  | <del> </del>                               |                 |               | D    | late/Time     |  |

| Bechte   | l Hanfor           | d Inc.                          |            | CHA                | AIN OF CUST          | ODY/S   | AMPLE                 | E ANAL  | YSIS  | REQU  | EST               |      | BO           | 0-068-84   | Page 1   | of <u>l</u>  |
|--|--------------------|---------------------------------|------------|--------------------|----------------------|---|-----------------------|---|---|---|-------------------|------|--------------|------------|----------|--|
| Collector ////   | 5/L                |                                 | C          | ompany<br>D Weel   | y Contact<br>kes     | Telephor<br>372-9:  |                       |   |   | Project C<br>TRENT, S                           |                   | tor  | rice Code    | 8L         |          | irnaround  |
| Project Designation 200 Area Ground                        | n<br>Iwater Well I | Drilling Waste Designa          | tion for   | um pling<br>200 We | g Location<br>est    |   |                       |   |   | SAF No.<br>B00-068                              |                   | Ai   | ir Quality   | <b>/</b> 🗆 | 21       | Days   |
| Ice Chest No.  | RC                 | 99-01041                        | 1041) F    | ield Log           | rbook No.<br>DILO    |   | COA<br>JRCRA03        | 200   |   | Method o<br>Fed-EX                              |                   | ent  |              |            |          |  |
| Shipped To<br>TMA/RECRA                                    | 1177               | _                               | 10         | ffsite Pr          | roperty No. A $\phi$ | 100   | ØS                    | -   |   | Bill of La                                      | ding/Air          |      | 795          | 30         | 32       | 7  |
| POSSIBLE SAMI  | PLE HAZA           | RDS/REMARKS                     |            |                    | Preservation         | Cool 4C   | Cool 4C               | None  | Non   | e No  | inė:              |      |              |            | :        |  |
|  |                    |                                 |            |                    | Type of Container    | aG  | aG                    | æG  | aG  | *   | G                 |      |              |            |          |  |
|  |                    |                                 |            | ľ                  | No. of Container(s)  | 1   | 1                     | t   |   |   |                   |      |              |            |          |  |
| Special Handling   | and/or Stor        | age                             |            |                    | Volume               | 250mL   | 250mL                 | 250mL   | 250n  | nL 250  | mL                |      |              |            |          |  |
|  |                    | SAMPLE ANAI                     | LYSIS      |                    |                      | Semi-VOA -<br>8270A (TCL);<br>Semi-VOA<br>8270A (Add-<br>On) (m-<br>Cresol) | VOA - \$250A<br>(TCL) | IC Anions -<br>300,0<br>{Nitrate};<br>Sulfides -<br>9030; Total<br>Cyanide - 9010 | ICP Met<br>6010,<br>(Supertri<br>Mercus<br>7471 - ( | A 90<br>ace);<br>y -                            | 45                | Tie  | TO:          |            |          |  |
| Sample N   | lo.                | Matrix *                        | Sample I   | Date               | Sample Time          | 47.   |                       |   | Francis<br>English                                  |   |                   |      |              |            |          |  |
| B10F89   |                    | SOIL                            | 11-01      | -00                | ) 0445               | X   | X                     | X   |   | <u> </u>  | X                 | BOY  | WI7          | mw.        | -00-     | 0160   |
|  |                    |                                 |            |                    |                      |   | ļ                     |   | <u> </u>  |   |                   | · .  |              |            |          |  |
|  |                    |                                 |            |                    |                      |   |                       |   |   |   |                   |      |              |            |          |  |
| C114 131 0 D D   | ogenegie.          |                                 | Sia/       | Print Na           |                      |   | longe                 | CIAL INSTR  | LICTIO  | NC NC   |                   |      |              |            |          | Matrix *   |
| CHAIN OF P Religioushed By Religioushed By Religioushed By | ANIN COURT         | Dute Time 153                   | Per H      | 7                  | B Shoudin            | nte/Time  | 50<br>0               |   |   |   |                   |      |              |            |          | S=Soli<br>SE=Sodiment<br>SO=Solid<br>S =Shadge<br>W = Water<br>O=Oli<br>A=Alr<br>DS=Drom Solids<br>DL=Drom Llenids |
| Relinquished By Relinquished By Relinquished By            |                    | Date/Time  Date/Time  Date/Time | Received B | ,Δς                | 7.11.7.1<br>De       | te/Time   | <u>د</u>              | Samples st<br>Shipping F<br>Collector n<br>on 11/1                                | acility<br>ot ava:                                  | on <u>(                                    </u> | / / E<br>elinquis | ?(·) | les<br>PT-   | Ð          |          | T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other   |
| LABORATORY   | Received By        |                                 |            |                    | <u>.</u>             | Titl  |                       |   | 1   |   |                   |      | <u>' - (</u> | Da         | ite/Time |  |
| SECTION FINAL SAMPLE DISPOSITION                           | Disposal Me        | thod                            |            |                    |                      |   |                       | Dispos  | ed By   |   | ·                 |      |              | D          | ate/Time |  |

# Recra LabNet - Lionville Laboratory BNA ANALYTICAL DATA PACKAGE FOR TNUHANFORD B00-068 H1127

DATE RECEIVED: 11/07/00 RFW LOT # :0011L175

| CLIENT ID | RFW | #   | MTX | PREP #   | COLLECTION | EXTR/PREP | ANALYSIS |
|-----------|-----|-----|-----|----------|------------|-----------|----------|
|           |     |     |     |          | 4          | -         |          |
| B10F88    | 001 |     | s   | 00LE1450 | 11/01/00   | 11/08/00  | 11/21/00 |
| B10F88    | 001 | MS  | S   | 00LE1450 | 11/01/00   | 11/08/00  | 11/21/00 |
| B10F88    | 001 | MSD | S   | 00LE1450 | 11/01/00   | 11/08/00  | 11/21/00 |
| B10F89    | 002 |     | s   | 00LE1450 | 11/01/00   | 11/08/00  | 11/22/00 |
| LAB QC:   |     |     |     |          |            |           |          |
|           |     |     |     |          |            |           |          |
| SBLKGF    | MB1 |     | s   | 00LE1450 | N/A        | 11/08/00  | 11/21/00 |
| SBLKGF    | MB1 | BS  | S   | 00LE1450 | N/A        | 11/08/00  | 11/21/00 |





Chemical and Environmental Measurement Information

## Recra LabNet Philadelphia Analytical Report

Client: TNU-HANFORD B00-068

**RFW #:** 0011L175

SDG/SAF #: H1127/B00-068

W.O. #: 10985-001-001-9999-00

Date Received: 11-07-00

## **SEMIVOLATILE**

The set of samples consisted of two (2) soil samples collected on 11-01-00.

The samples and their associated QC samples were extracted on 11-08-00 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270C for TCL Semivolatiles on 11-21-00.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- 1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
- 2. The samples were extracted and analyzed within required holding times.
- 3. Non-target compounds were identified in these samples.
- 4. One (1) of thirty-six (36) surrogate recoveries was outside EPA QC limits. However, EPA CLP surrogate recovery criteria were met (i.e., no more than one outlier per fraction {acid and base neutral} and no recoveries less than 10%).
- 5. Three (3) of twenty-two (22) matrix spike recoveries were outside EPA QC limits.
- 6. One (1) of eleven (11) blank spike recoveries was outside acceptance criteria..
- 7. The method blank contained the common laboratory contaminants Bis(2-Ethylhexyl)phthalate at a level less than the CRQL.
- 8. Low recoveries were reported for 2,4,6-Tribromophenol and for the spike compound, Pentachlorophenol. The presence of 1,3,5-Tribromo-2-methoxy Benzene and Pentachloromethoxy Benzene in the Chromatograms indicated that a conversion had occurred during the extraction process. The conversion product for 2,4,6-Tribromophenol has been reported as a non-target compound. Spectras and quanitation reports for the pentachlorophenol conversion product have been included in the blank and matrix spike analyses. Pentachlorophenol conversion was not detected in the unspiked sample analyses. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 15 pages.

- 9. Manual integrations are performed according to OP L-QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in Section III ("Technical Flags For Manual Integration"); hard copies of the integrations have been included with the quantitation data.
- 10. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

J. Michael Taylor

VP, Laboratory General Manager

Lionville Laboratory

pef\group\data\bna\tnu-hanford-11-175.doc

12-11-00

Date



## **GLOSSARY OF BNA DATA**

## **ABBREVIATIONS**

| BS | - | Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions |
|----|---|--|
|    |   | and carried through all the steps in the method. Spike recoveries are reported.                  |

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Suffix added to sample number to indicate that results are from a diluted analysis.

NA = Not Applicable.

**DF** = Dilution Factor.

NR = Not Required.

SP, Z = Indicates Spiked Compound.

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#### **GLOSSARY OF BNA DATA**

## **DATA QUALIFIERS**

- U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I = Interference.
- NO = Result qualitatively confirmed but not able to quantify.
- A = Indicates that a TIC is a suspected aldol-condensation product.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y = Additional qualifiers used as required are explained in the case narrative.

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05

## TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

- MP Missed Peak: manually added peak not found by automatic quan program.
- PA Peak Assignment: quan report was changed to reflect correct peak assignment.
- RI Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

## Recra LabNet - Lionville Laboratory

Report Date: 11/27/00 08:59

Semivolatiles by GC/MS, HSL List

Work Order: 10985001001 Page: la Client: TNUHANFORD B00-068 H1127 RFW Batch Number: 0011L175 SBLKGF BS B10F88 B10F89 SBLKGF B10F88 B10F88 Cust ID: 00LE1450-MB1 002 00LE1450-MB1 001 MSD 001 001 MS RFW#: Sample SOIL SOIL SOIL SOIL SOIL Information Matrix: SOIL 1.00 1.00 1.00 D.F.: 1.00 1.00 1.00 ug/Kg uq/Kq ug/Kg ug/Kg uq/Kq Units: ug/Kg 8 \* 78 왐 89 83 ş. Nitrobenzene-d5 87 ¥ 80 왐 74 96 ł 84 왐 77 ŧ 80 Ŷ ş Surrogate 2-Fluorobiphenvl 89 ž 84 120 ¥ 111 ş 89 ¥ Terphenyl-d14 114 웋 112 ş. 102 ş. Recovery ¥ 78 71 ¥ 71 ¥ 90 Phenol-d5 79 ¥ 76 옿 73 옿 89 ž 82 ş ¥ 76 Ŷ 2-Fluorophenol 79 Ł 78 14 \* % 윻 51 87 ¥ 79 2,4,6-Tribromophenol 35 86 ==f1 =====f1========f1 =f1430 U 330 U 78 \* 71 ¥ Phenol U 330 Ħ 360 U 360 П 430 11 330 370 IJ bis(2-Chloroethyl)ether \_\_\_\_\_ 2-Chlorophenol Ħ 330 U 78 \* 73 ž 430 370 IJ 75 Ł U 330 U 330 U 360 П 430 11 370 IJ 360 1,3-Dichlorobenzene U 77 ¥ Ħ 330 370 U ۶ 71 ¥ 430 1.4-Dichlorobenzene 72 IJ 430 11 330 U 330 Ū 1,2-Dichlorobenzene\_\_\_\_\_ 370 U 360 Ħ 360 U 330 U 370 П 360 IJ 360 U 430 Ħ 330 2-Methylphenol 2,2'-oxybis(1-Chloropropane)\_\_\_\_ U 430 11 330 U 330 370 U 360 13 360 3- and/or 4-Methylphenol\_\_\_\_\_ U 330 U IJ 330 370 Ħ 360 IJ 360 IJ 430 79 430 IJ 330 IJ 80 370 U 77 Ŷ 옿 N-Nitroso-di-n-propylamine U 330 U Hexachloroethane\_\_\_\_ 13 330 370 U 360 U 360 Ħ 430 IJ 370 U 360 IJ 360 U 430 IJ 330 Ħ 330

Nitrobenzene \_\_\_\_\_ 17 430 IJ 330 U 330 U Isophorone 370 IJ 360 U 360 Ħ 330 U П 330 2-Nitrophenol 370 U 360 IJ 360 u 430 2,4-Dimethylphenol\_\_\_\_\_ U 11 330 U 330 U 360 IJ 360 430 370 bis(2-Chloroethoxy)methane\_\_\_\_ U 330 U 330 Ū 370 U 360 [] 360 IJ 430 2,4-Dichlorophenol\_\_\_\_\_ П 430 U 330 U 330 U 370 U 360 U 360 1,2,4-Trichlorobenzene\_\_\_\_ 430 IJ 370 U 76 ş 74 ¥ 11 330 82 ¥ 330 IJ 330 U IJ IJ 430 IJ Naphthalene 370 U 360 360 4-Chloroaniline 370 U 360 U 360 Ħ 430 IJ 330 П 330 U Hexachlorobutadiene\_\_\_\_\_ IJ 370 U 360 U 360 IJ 430 IJ 330 330 U 4-Chloro-3-methylphenol\_\_\_\_ ¥ 430 IJ 330 IJ 82 ક્ષ 370 U ¥ 75 84 IJ 370 U U Ħ 430 11 330 U 330 .2-Methylnaphthalene 360 360 U U Hexachlorocyclopentadiene \_\_\_ Ħ 330 330 370 U 360 U 360 U 430 U IJ 330 U 330 U 2,4,6-Trichlorophenol 370 IJ 360 U 360 430 U U 2,4,5-Trichlorophenol 930 IJ 910 U 910 U 1100 U 830 830

\*= Outside of EPA CLP QC limits.

| RFW Batch Number: 0011L175         |        |   | HANFORD BOO  | -068 |         | Work | Order: 109 | 85 |             | Page: 1b     |     |
|------------------------------------|--------|---|--------------|------|---------|------|------------|----|-------------|--------------|-----|
| Cust ID:                           | B10F88 | • | B10F88       |      | B10F88  |      | B10F89     |    | SBLKGF      | SBLKGF BS    |     |
| RFW#:                              | 003    |   | 001 MS       |      | 001 MSD |      | 002        |    | 00LE1450-MB | . 00LE1450-B | Œ1  |
| 2-Chloronaphthalene                | 370    | U | 360          | U    | 360     | U    | 430        | U  | 330 t       | 330          | U   |
| 2-Nitroaniline                     | 930    | Ū | 910          | U    | 910     | Ü    |            | Ū  | 830 t       |              | U   |
| Dimethylphthalate                  | 370    | Ū | 360          | Ū    | 360     | Ū    |            | Ū  | 330 T       |              | Ū   |
| Acenaphthylene                     | 370    | Ū | 360          | Ü    | 360     | Ü    |            | Ū  | 330 T       |              | Ü   |
| 2,6-Dinitrotoluene                 | 370    | Ū | 360          | U    | 360     | Ū    |            | U  | 330 t       |              | U   |
| 3-Nitroaniline                     | 930    | Ū | 910          | Ū    | 910     | Ū    |            | U  | 830 t       |              | Ū   |
| Acenaphthene                       | 370    | Ū | 83           | ę.   | 81      | ક    |            | U  | 330 t       |              | ક   |
| 2,4-Dinitrophenol                  | 930    | U | 910          | Ü    | 910     | U    |            | U  | 830 t       |              | U   |
| l-Nitrophenol                      | 930    | U | 71           | è.   | 61      | ક્ષ  |            | U  | 830 T       |              | ક   |
| Dibenzofuran                       | 370    | U | 360          | U    | 360     | Ū    |            | U  | 330 t       |              | U   |
| 2,4-Dinitrotoluene                 | 370    | U | 91 *         | *    | 87      | ક    |            | Ū  | 330 t       | 90 4         | k & |
| Diethylphthalate                   | 370    | U | 360          | Ü    | 360     | U    |            | U  | 330 t       | 330          | Ū   |
| -Chlorophenyl-phenylether          | 370    | U | 360          | Ū    | 360     | U    |            | U  | 330 t       |              | U   |
| luorene                            | 370    | U | 360          | U    | 360     | U    |            | U  | 330 t       |              | U   |
| -Nitroaniline                      | 930    | U | 910          | Ū    | 910     | U    |            | U  | 830 t       | 830          | U   |
| ,6-Dinitro-2-methylphenol          | 930    | Ū | 910          | Ū    | 910     | Ū    |            | U  | 830 t       |              | U   |
| -Nitrosodiphenylamine (1)          | 370    | U | 360          | U    | 360     | U    | 430        | U  | 330 t       | 330          | U   |
| -Bromophenyl-phenylether           | 370    | U | 360          | U    | 360     | U    | 430        | U  | 330 t       | 330          | Ü   |
| Mexachlorobenzene                  | 370    | Ū | 360          | U    | 360     | Ū    |            | U  | 330 t       |              | U   |
| Pentachlorophenol                  | 930    | U | 9 *          | ક    | 3 *     | 옿    | 1100       | U  | 830 t       | 21           | ક   |
| henanthrene                        | 370    | U | 360          | U    | 360     | U    | 430        | U  | 330 t       |              | U   |
| nthracene                          | 370    | U | 360          | U    | 360     | U    | 430        | U  | 330 t       | 330          | U   |
| arbazole                           | 370    | U | 360          | U    | 360     | U    | 430        | U  | 330 t       | 330          | U   |
| i-n-butylphthalate                 | 370    | U | 360          | U    | 360     | U    | 430        | U  | 330 t       | 330          | Ū   |
| luoranthene                        | 370    | U | 360          | U    | 360     | U    | 430        | U  | 330 T       | 330          | U   |
| vrene                              | 370    | U | 106          | ક્ષ  | 95      | 8    | 430        | U  | 330 t       | 104          | 8   |
| utylbenzylphthalate                | 370    | U | 360          | U    | 360     | U    | 430        | U  | 330 U       | 330          | U   |
| ,3'-Dichlorobenzidine              | 370    | U | 360          | U    | 360     | Ū    | 430        | U  | 330 T       | 330          | Ū   |
| enzo(a)anthracene                  | 370    | U | 360          | U    | 360     | U    | 430        | U  | 330 t       | 330          | Ų   |
| hrysene                            | 370    | U | 360          | U    | 360     | U    | 430        | U  | 330 t       | 330          | ប   |
| is(2-Ethylhexyl)phthalate          | 430    | В | 300          | JB   | 350     | JB   | 550        | В  | 530         | 220          | JB  |
| i-n-octyl phthalate                | 370    | U | 360          | U    | 360     | U    | 430        | U  | 330 t       | 330          | U   |
| enzo(b)fluoranthene                | 370    | U | 360          | U    | 360     | U    | 430        | U  | 330 U       | 330          | U   |
| enzo(k)fluoranthene                | 370    |   |              | Ū    | 360     |      |            | U  | 330 U       |              | Ü   |
| enzo(a)pyrene                      | 370    |   |              | Ū    | 360     |      | 430        |    | 330 U       |              |     |
| ndeno(1,2,3-cd)pyrene              | 370    |   |              | U    | 360     |      | 430        |    | 330 U       |              |     |
| ibenz(a,h)anthracene               | 370    |   |              | U    | 360     |      | 430        |    | 330 U       |              |     |
| enzo(g,h,i)perylene                | 370    |   |              | Ū    |         | Ū    | 430        |    | 330 U       |              |     |
| 1) - Cannot be separated from Diph |        |   | t= Outside o |      |         |      |            | _  | 550         | 550          | ~   |

#### 1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

| B10F88 |  |  |
|--------|--|--|
| 1      |  |  |

Lab Name: Recra.LabNet

Work Order: 10985001001

Client: TNUHANFORD B00-068 H1127

Matrix: (soil/water) SOIL

Lab Sample ID: 0011L175-001

Sample wt/vol: 30.1 (g/mL)  $\underline{G}$ 

Lab File ID: A112110

Level: (low/med) LOW

Date Received: 11/07/00

% Moisture: \_\_\_10 decanted: (Y/N)\_\_\_

Date Extracted: 11/08/00

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/21/00

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

: Hq CONCENTRATION UNITS:

Number TICs found: <u>5</u>

(ug/L or ug/Kg) ug/Kg

| CAS NUMBER | COMPOUND NAME | RT    | EST. CONC. | Q  |
|------------|---------------|-------|------------|----|
| 1.         | UNKNOWN       | 20.12 | 600        | JВ |
| 2.         | UNKNOWN       | 21.87 | 100        | J  |
| 3.         | UNKNOWN       | 23.35 | 200        | JB |
| 4.         | UNKNOWN       | 26.59 | 100        | JB |
| 5.         | ALKANE        | 27.10 | 300        | J  |
|            |               | l     |            | l  |

## 1F

## SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

| 1      |  |  |
|--------|--|--|
| B10F89 |  |  |
| 1      |  |  |

Lab Name: <u>Recra.LabNet</u>

Work Order: 10985001001

Client: TNUHANFORD B00-068 H1127

Matrix: (soil/water) SOIL

Lab Sample ID: 0011L175-002

Sample wt/vol: 31.0 (g/mL) G

Lab File ID: A112211

Level: (low/med) LOW

Date Received: 11/07/00

% Moisture: \_\_\_25 decanted: (Y/N)\_\_\_ Date Extracted: 11/08/00

Concentrated Extract Volume: 1000(uL) Date Analyzed: 11/22/00

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: \_\_

Number TICs found: <u>5</u>

CONCENTRATION UNITS:

(ug/L or ug/Kg) ua/Ka

| CAS NUMBER | COMPOUND NAME | RT    | EST. CONC. | Q<br>===== |
|------------|---------------|-------|------------|------------|
| 1.         | UNKNOWN       | 20.07 | 500        | JB         |
| 2.         | UNKNOWN       | 21.83 | 300        | J          |
| 3.         | UNKNOWN       | 23.28 | 200        | JB         |
| 4.         | UNKNOWN       | 23.32 | 300        | JB         |
| 5.         | UNKNOWN       | 25.01 | 200        | J          |
|            |               |       |            | ll         |

# The second with the same of the will be a second SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

... CLIENT SAMPLE NO.

TENTATIVELY IDENTIFIED COMPOUNDS

|     | SBLKGF  |  |
|-----|---------|--|
|     | Laphrat |  |
| - 1 | l .     |  |
|     | · ·     |  |

Lab Name: <u>Recra.LabNet</u>

Work Order: 10985001001

Client: TNUHANFORD B00-068 H1127

Matrix: (soil/water) SOIL

Lab Sample ID: 00LE1450-MB1

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: A112108

Level: (low/med) LOW

Date Received: 11/08/00

% Moisture: \_\_\_\_\_ decanted: (Y/N)\_\_ Date Extracted: 11/08/00

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 11/21/00

Injection Volume: 2.0(uL)

Dilution Factor: 1.00

GPC Cleanup: (Y/N) N

pH: \_\_\_

Number TICs found: <u>5</u>

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

| CAS NUMBER   | COMPOUND NAME | RT    | EST. CONC. | Q<br>==== |
|--|---------------|-------|------------|-----------|
| j 1.   | UNKNOWN       | 20.12 | 900        | J         |
| 2.   | UNKNOWN       | 23.01 | 100        | Ĵ         |
| 3.   | UNKNOWN       | 23.05 | 200        | J         |
| 4.   | UNKNOWN       | 23.36 | 400        | J         |
| 5.   | UNKNOWN       | 26.59 | 100        | J         |
| <u>   </u> |               | lI    |            | l         |

| RECRA Lab   |             |  | CI  | usto        | ody TELD PE | Tran<br>RSONN    | sfe<br>EL: (   | er i<br>com                                      | Rece<br>PLETE                                    | ord/l<br>only s                                  | _ab '  | W C              | ork<br>as                                    | Re           | qu           | es             | <b>t</b> Pa         | ıge _        | 1.          |  |  |                       | V                                 | F  | REC<br>ab/                                    | R/<br>le                           |
|---|-------------|--|---|-------------|-------------|------------------|----------------|--|--|--|--|------------------|--|--------------|--------------|----------------|---------------------|--------------|-------------|--|--|-----------------------|-----------------------------------|--|---|------------------------------------|
| <del></del>   |             |  | 110   | 30          | 2 21        | 0                | •              |  | Refrige  | rator #  |  | <u>A</u><br>L    | 15   | 1            |              |                | Т                   |              | S           | <u> </u>   | - <u>D</u>                                       | 15                    | -T                                | Ï  |   |                                    |
| Client  |             |  |   |             | O-CX        | <b>D</b>         |                |  | , ionigo   |  | Liquid   | ╁┸               | 13   | -            |              |                |                     | -            | 3           | -  |  | <del>  _</del>        |                                   |  |   |                                    |
| Est. Final Pro  | j. Samp     | ling Date                              | ~~~   | 11-0        | 999 -       | 20               |                | -  | #/Type   | Container  | Solid  | las              | las  |              |              |                |                     |              | las         | 1  | las  | las                   |                                   |  |   |                                    |
| II .  |             |  | 2172  | <u> </u>    | 7.1.1.6     | <u> </u>         | -              |  |  |  | Liquid   | 9                |  |              |              |                |                     | •            | 0           |  |  | 0                     |                                   |  |   |                                    |
| Project Conta   | et Mana     | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | <u> </u>                                      |             |             |                  | <del></del>    |  | Volume   | ,  | Solid  | 920              | 250  |              |              |                |                     |              | 250         | ١  | 250  | A50                   |                                   |  |   |                                    |
| ac SOCC   | C( MENE     | nu <u>e</u> t                          | <del>fd</del>                                 | TAT         | 15          | day              |                |  | Preserv  | vatives  |  |                  |  |              |              |                |                     |              | 1           |  |  |                       |                                   | ·  |   |                                    |
| 1   |             |  |   |             |             |                  |                |  | ANALY  | ece  |  |                  | Т.   | ANIC         |              |                |                     |              |             | DRG_   | 1. (   |                       |                                   |  | ĺ   |                                    |
| Date Rec'd  |             | 7-00                                   | Da  | ate Due     | 8511        | - <del>(X)</del> |                |  | REQUE  |  | -  | ٥                | BNA  | Pest/<br>PCB | Herb         |                |                     |              | H C P       | 중  | H  | £                     |                                   |  | .   |                                    |
| Account #   | <u> </u>    |  |   |             |             | ····             | Τ              | <u> </u>   |  | <del></del>                                      | <u> </u>   | <del>  -</del>   | <u>.                                    </u> |              | <del>-</del> |                | REC                 |              | .abNe       | l Use  | <u> </u>   | 4.                    | 1                                 |  |   | -                                  |
| MATRIX<br>CODES:<br>8 - Soil<br>8E - Sediment<br>90 - Soild | Lab<br>ID   |  | Cilen   | t iD/Desc   | ription     |                  | Che<br>(i      | itrix<br>DC<br>osen<br>(/)                       | Matrix   | Date<br>Collected                                | Time<br>Collected                                | HTYPO            | AS-SA  |              |              |                |                     | -            | RCP-9-TO    | TCnTo  | TC FOS   | THEI                  |                                   |  |   |                                    |
| SL - Sludge<br>W - Water                                    | 001         | BI                                     | oF8   | R           |             | ····             | 1              | 1  | 5  | 1/1/00   | 1040   |                  | ×  |              |              |                |                     |              | X           | /  | X  | ×                     |                                   |  |   |                                    |
| A - Air   | <u>क्</u> र |  | o F E   |             |             |                  | 1              | <del>                                     </del> | 1  | 1 7.750  | 0945   |                  | ×  |              |              |                |                     | -            | ×           | /  | ×  | X                     |                                   |  |   |                                    |
| DS - Drum<br>Solida   | щ           | <u> </u>                               | <u>, , , , , , , , , , , , , , , , , , , </u> | <u> </u>    |             |                  |                |  | <del>                                     </del> | <del> </del>                                     | V 13-  | ľ                | 1  |              |              |                |                     |              |             |  |  |                       |                                   |  |   |                                    |
| DL - Drum<br>Liquids  |             |  |   |             |             |                  |                | <del>                                     </del> | <del> </del>                                     | <del> </del>                                     |  | <b>-</b>         | 1  |              |              |                |                     |              |             |  | 1  | 1                     |                                   |  |   |                                    |
| L - EP/TCLP<br>Leachate                                     |             |  |   |             |             |                  | <del> </del>   | <del> </del>                                     |  | <del> </del>                                     |  |                  | 1  |              |              |                |                     |              |             | <del>                                     </del> | <del>                                     </del> | 1                     |                                   |  |   | _                                  |
| W1 - Wipe<br>X - Other                                      |             |  |   |             |             |                  | <del> </del>   | <del> </del>                                     |  | <b> </b>   |  |                  | 1  |              |              |                |                     |              | <b> </b>    | <del> </del>                                     | ╁╼   | 1                     |                                   | $\dashv$                                     |   | _                                  |
| F - Fish  |             |  |   |             |             |                  | <del>  -</del> | <u> </u>   | <del> </del>                                     |  |  | <del>  -</del> - | +  |              |              |                |                     |              | ļ           | <u> </u>   | ╁┈┈  | <del> </del>          |                                   |  |   | 1                                  |
|   |             |  |   |             |             |                  | ┼              | <del> </del>                                     | <del> </del>                                     | <del>                                     </del> |  |                  | <del> </del>                                 | <del> </del> |              |                |                     |              |             | ╁─   | ┼  | $\vdash$              |                                   |  | <del></del>                                   |                                    |
|   |             |  |   | <del></del> |             |                  | <b>.</b>       | ├  |  | <del> </del>                                     | <del>                                     </del> | ├                | ╅  |              |              |                |                     |              |             | ┼  | ╁┈─  | -                     | -                                 |  | $\longrightarrow$                             |                                    |
|   |             |  |   |             |             |                  | -              |  | ļ <u> </u>                                       |  |  | _                | <del> </del>                                 |              |              |                |                     |              | _           |  | +  | +-                    |                                   | _  | $\rightarrow$                                 |                                    |
|   |             |  |   |             | <u></u>     |                  |                | DATE   | <br>/REVISIOI                                    | Ne .   |  | <u>L.</u>        |  | į            |              |                |                     |              | <del></del> | <u> </u>   | <u> </u>   |                       |                                   |  |   |                                    |
| Special Instruct  | ions:       | ky.                                    | ix (  | 7C          |             |                  |                |  | <b>&gt;</b>                                      | 1 Jum<br>2 Was<br>3 Davis                        |  |                  |  | emi<br>Yr    | Voc.         | are.           | ar<br>or            | منم<br>لاو ط | - Ai<br>2)  | and De<br>rbill # .<br>Ambie<br>Recei            | were: ed elivered ent or C                       | hilled)               | COO<br>1) F<br>Pac<br>2) L<br>Pac | C Tape<br>Present<br>kage<br>Inbroke<br>kage | on Oute<br>on On Oute<br>on on Oute<br>on Sam | N<br>uter<br>N<br>np <del>le</del> |
| Relinquished by   | G           | Received<br>by                         |   | Date 1/7/00 | Time        |                  | elinqui<br>by  | shed<br>OST                                      |  | 6<br>Received<br>by                              | n<br>DBIG  | )ato             | Tin  | ne           | Samp         | es La<br>Recor | es Betw<br>bels and | <b>,</b>     | (P)         | ondition<br>> 1 4 7 (<br>Labels<br>roperly       | n o c<br>s Indica<br>Presen<br>O c<br>ved Wil    | or N te ved or N thin | San<br>COO<br>Upo<br>Coo          | Inbroke<br>nple 2<br>C Reso<br>n Sam         |   | i<br>ent                           |
|   |             |  | <u></u>                                       | 1.100       | <u> </u>    |                  | WAS            | STE  |  |  |  | INA<br>'''       | 13   |              | 4235         |                | <b>3</b> 27         |              |             |  | Ο,   | ··•                   | Tem                               | ıp. 🗪  | ·   | C<br>                              |

| Bechtel   | Hanford Inc.   | C           | HAIN OF CUST          | ODY/S   | AMPLE  | ANAL  | YSIS  | REQUEST   |                         | B00                                    | 0-068-83 | Page 1   | of <u>1</u>  |  |
|---|--|-------------|-----------------------|---|--|---|---|---|-------------------------|--|----------|----------|--|--|
| Collector   | Mar  | Comp        | nny Contact<br>/eekes | Telephor<br>372-9:  | ne No.   |   |   | Project Coordii<br>TRENT, SJ                                    | a tor                   | Price Code                             | 8L       |          | rmaroum  |  |
| Project Designation<br>200 Area Groundw                         | rater Well Drilling Waste Designati  |             | ing Location<br>West  |   |  |   |   | SAF No.<br>B00-068  | Air Quality             |  | 21       | Days ¬   |  |  |
| Ice Chest No.   | 194-068 (18  | Field I     | Logbook No.           |   | COA<br>JRCRA03                                   | 200   | _   | Method of Shipment<br>Fed-EX                                    |                         |  |          |          |  |  |
| Shipped To  | 1M2 11-1-00  | Offsite     | Property No.          | OPP   | 5  | Bill of Lading  |   |   |                         | 453                                    | 27       | 1        |  |  |
| POSSIBLE SAMP   | LE HAZARDS/REMARKS   |             | Preservation          | Cool 4C   | Cool 4C  | None  | Non   | e None  |                         |  |          |          |  |  |
|   |  |             | Type of Container     | aG  | aG   | åG  | aG  | aG  |                         |  |          |          |  |  |
|   |  |             | No. of Container(s)   | 1   | 1  | l   | 1   |   |                         |  |          |          |  |  |
| Special Handling a  | nd/or Storage  |             | Volume                | 250mL   | 250mL  | 250mL   | 250n  | nL 250mL  |                         |  |          |          |  |  |
|   | SAMPLE ANAL  | YSIS        | į                     | Semi-VOA<br>8270A (TCL);<br>Semi-VOA<br>8270A (Add-<br>Ou) (m-<br>Cresol) | VOA - \$260A<br>(TCL)                            | IC Anions -<br>300.0<br>{Niorate};<br>Sulfides -<br>9030; Total<br>Cyanide - 9010 | ICP Me<br>6010<br>(Supertr<br>Mercu<br>7471 - | A 9045<br>ry -  | Tio                     | To:                                    |          |          |  |  |
| Sample No   | . Matrix *   | Sample Date | Sample Time           |   |  | <b>W. 838</b>   |   |   |                         |  |          |          |  |  |
| B10F88  | SOIL   | 11-01-00    | 1040                  | X   | X  | X   | X   | ( X   | _B0                     | YWILE                                  | Soon     | -00-     | 0154   |  |
|   |  |             |                       |   |  | <u> </u>  |   |   |                         | <del></del>                            |          |          |  |  |
|   |  | <del></del> |                       |   | <del>                                     </del> | <del>                                     </del>                                  |   |   |                         |  | -        |          | <del>                                     </del>   |  |
|   |  |             |                       |   | <del> </del>                                     | <del>                                     </del>                                  |   | <del></del>   |                         |  |          |          | <del></del> -  |  |
| CHAIN OF PO   |  | Sign/Prin   |                       | ·   |  | IAL INSTR   | UCTIO   | ONS   |                         | ······································ | 1        | <u> </u> | Matrix •   |  |
| Relinquished By Relinquished By Relinquished By Relinquished By | Date/Time 150 Date/Time 150 Date/Time 150 Date/Time 150 Date/Time Date/Time Date/Time  Date/Time | Received    | DE NORMANDO           | ate/Time IS  ste/Time IO  ste/Time  ate/Time  ate/Time  ate/Time          | <b>3</b> 9.7                                     | Shipping Collector  | Facilit<br>not av                             | in Ref.#2B a<br>y on 11 / T<br>allable to relin<br>Ofor shipmen | <u>(20.</u><br>guish sa |  |          | ate/Time | S=Soil SE=Soliment SC=Solid SC |  |
| SECTION   |  | ·           |                       |   |  |   |   |   |                         |  |          |          |  |  |
| FINAL SAMPLE DISPOSITION  | Disposal Method  |             |                       |   | Dispos   | sed By  |   |   |                         | Q                                      | alc/Time |          |  |  |

| Bechtel   | Hanford Inc.  | CI          | HAIN OF CUST          | ODY/S   | AMPLE                     | ANAL  | YSIS   | REQUEST                      |    | В             | 00-068-84      | Page 1  | of <u>l</u>                                      |
|---|---|-------------|-----------------------|---|---------------------------|---|--|------------------------------|----|---------------|----------------|---|--|
| Collector W   | m   | Compa       | nny Contact<br>/eckes | Telephor<br>372-95  | ie No.                    |   |  | Project Coordii<br>TRENT, SJ |    | Price Code    | 8L             |   | raarould <sup>14</sup>                           |
| Project Designation<br>200 Area Groundw                         | vater Well Drilling Waste Designa                     |             | ing Location<br>West  |   |                           |   |  | SAF No.<br>B00-068           |    | Air Quality 🗍 |                |   | Days T   |
| Ice Chest No.   | RC99-0641   | Field I     | Logbook No.           |   | COA<br>JRCRA032           | 03200 Method of Shipment<br>Fed-EX  |  |                              |    |               |                |   | -  |
| Shipped To TMA/RECRA  | 00-1-11 CMT   | Offsite     |                       | IOØ   | Ø5.                       | ,   |  | Bill of Ladine/              | 35 | No. 795       | 436            | 32  | 7  |
| POSSIBLE SAMP   | LE HAZARDS/REMARKS                                    |             | Preservation          | Cool 4C   | Cool 4C                   | None  | Non  | e None                       |    |               |                | ]<br>;  |  |
|   |   |             | Type of Container     | aG  | aG                        | àG  | aG   | aG                           |    |               |                |   |  |
|   |   |             | No. of Container(s)   | 1   | l                         | 1   | -  | 1                            |    |               |                |   |  |
| Special Handling a  | ud/or Storage   |             | Volume                | 250mL   | 250mL                     | 250mL   | 250m   | nL 250mL                     |    |               |                |   |  |
|   | SAMPLE ANAI   | LYSIS       |                       | Semi-VOA<br>8270A (TCL);<br>Semi-VOA<br>8270A (Add-<br>On) [m-<br>Cresol] | VOA - 8260A<br>(TCL)      | IC Anions -<br>300.0<br>(Nitrate);<br>Sulfides -<br>9030; Total<br>Cyanide - 9010 | ICP Met<br>6010<br>(Supertr<br>Mercu<br>7471 - (                             | A 9045<br>mce);<br>ry -      | Tu | , To:         |                |   |  |
| Sample No   | o. Matrix *   | Sample Date | Sample Time           |   | 1-77                      | 13.3  |  |                              |    |               |                | HOPE STATES   |  |
| B10F89  | SOIL  | 11-01-0     | 0 0445                | X   | X                         | X   |  | K X                          | B  | YWIT          | 2000           | -00-  | 0160   |
|   |   | ·           |                       | ļ   |                           | <u> </u>  |  |                              |    |               | <del>  -</del> |   |  |
|   |   |             |                       | <u> </u>  |                           | <del> </del>  | <del></del> -  | -                            |    |               |                |   | <del>                                     </del> |
|   |   |             |                       | <del> </del>  |                           | <del>                                     </del>                                  | _  | <del>-  </del>               |    |               | <del></del>    |   | <del>                                     </del> |
| CHAIN OF PO   | OSSESSION   | Sign/Prin   | t Names               |   |                           | IAL INSTR   | UCTIO  | DNS                          |    |               |                | <u> </u>  | Matrix *   |
| Relinquished By Relinquished By Relinquished By Relinquished By | Date/Time  Date/Time  Date/Time  Date/Time  Date/Time | 2B Shoudin  | ate/Time              | D_<br>เม  | Shipping I<br>Collector I | acility<br>ot ava   | n Ref.# <u>2B</u> at<br>on <u>11/1/</u><br>ilable to relind<br>Ofor shipment | <u> 627.</u> )<br>uish sa    |    | D             |                | S=Solil SE=Scalineati SO=Solid S=Solidge W = Water O=OH A=Alr DS=Dram Solids DL=Dram Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other |  |
| LABORATORY   SECTION  | Received By   |             |                       | Tit   | le                        |   |  |                              | ·  |               | D              | ate/Time  |  |
| i   | Disposal Method                                       |             |                       |   | · ·                       | Dispo   | sed By   |                              |    |               | <u> </u>       | Date/Time   | · · · · · ·                                      |

# Figure 1. Sample Check-in List

| Date/Time Received: $11-7-00 / 0930$   | <del>_</del>                              |
|--|---|
| SDG#: 0011175  | <del></del>                               |
| Work Order Number:   | SAF#_ 300:068                             |
| Shipping Container ID:   | Chain of Custody # 800-068-83             |
| 1. Custody Seals on shipping container intact?   | Yes [] No []                              |
| 2. Custody Seals dated and signed?   | Yes [ No [ ]                              |
| 3. Chain-of-Custody record present?  | Yes [] No []                              |
| 4. Cooler temperature 2.0°C  | ·   |
| 5. Vermiculite/packing materials is  | Wet [] Dry [X                             |
| 6. Number of samples in shipping container:  | 10  |
| 7. Sample holding times exceeded?  | Yes [] No [7]                             |
| 9. Samples are:  | _hazard labels _appropriate sample labels |
| in good condition  | _leaking _have air bubbles                |
| <ul><li>10. Were any anomalies identified in sample re</li><li>11. Description of anomalies (include sample re</li></ul> | 10  |
|  |   |
| Sample Custodian/Laboratory: Theppel   | Poerra Date: 11-7-00                      |
| Telephoned to:   | OnBy                                      |

# Recra LabNet - Lionville Laboratory VOA ANALYTICAL DATA PACKAGE FOR TNUHANFORD B00-068 H1127

DATE RECEIVED: 11/07/00 RFW LOT # :0011L175

| CLIENT ID | RFW | # MTX | PREP #   | COLLECTION | EXTR/PREP | ANALYSIS    |
|-----------|-----|-------|----------|------------|-----------|-------------|
|           |     | · ·   | -        |            |           | <del></del> |
| B10F88    | 001 | s     | 00LVH484 | 11/01/00   | N/A       | 11/10/00    |
| B10F88    | 001 | MS S  | 00LVH484 | 11/01/00   | N/A       | 11/10/00    |
| B10F88    | 001 | MSD S | 00LVH484 | 11/01/00   | N/A       | 11/10/00    |
| B10F89    | 002 | S     | 00LVH484 | 11/01/00   | N/A       | 11/10/00    |
| LAB QC:   |     |       |          | ,          |           |             |
|           |     |       |          |            |           |             |
| VBLKXS    | MB1 | s     | 00LVH484 | N/A        | N/A       | 11/10/00    |
| VBLKXS    | MB1 | BS S  | 00LVH484 | N/A        | N/A       | 11/10/00    |





Chemical and Environmental Measurement Information

# Recra LabNet Philadelphia Analytical Report

Client: TNU-HANFORD B00-068

W.O. #: 10985-001-001-9999-00

**RFW** #: 0011L175

Date Received: 11-07-00

SDG/SAF #: H1127/B00-068

# **GC/MS VOLATILE**

The set of samples consisted of two (2) soil samples collected on 11-01-00.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for TCL Volatile target compounds on 11-10-00.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

- 1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
- 2. The samples were analyzed within required holding time.
- 3. Non-target compounds were detected in Sample B10F89.
- 4. All surrogate recoveries were within EPA QC limits.
- 5. All matrix spike recoveries were within EPA QC limits.
- 6. All blank spike recoveries were within EPA QC limits.
- 7. The method blank contained the common laboratory contaminant Methylene Chloride at levels less than 3x the CRQL.
- 8. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

J. Michael Taylor

VP, Laboratory General Manager

Lionville Laboratory

Date

pef\group\data\voa\tnu-hanford-11-175.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 15 pages.

# **GLOSSARY OF VOA DATA**

# **DATA QUALIFIERS**

- U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D = Identifies all compounds identified in an analysis at a secondary dilution factor.
- l = Interference.
- NQ = Result qualitatively confirmed but not able to quantify.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y = Additional qualifiers used as required are explained in the case narrative.

mmz\10-94\gloss.voa



03

# **GLOSSARY OF VOA DATA**

# **ABBREVIATIONS**

| BS | = | Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions |
|----|---|--|
|    |   | and carried through all the steps in the method. Spike recoveries are reported.                  |

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

**DL** = Suffix added to sample number to indicate that results are from a diluted analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP, Z = Indicates Spiked Compound.

mmz\10-94\gloss.voa



### Recra LabNet - Lionville Laboratory

Client: TNUHANFORD B00-068 H1127 Work Order: 10985001001 Page: 1a

Report Date: 11/20/00 14:43

Volatiles by GC/MS, HSL List

LO CCust ID: B10F88 B10F88 B10F88 B10F89 **VBLKXS** VBLKXS BS Sample RFW#: 001 001 MS 001 MSD 002 00LVH484-MB1 00LVH484-MB1 Information Matrix: SOIL SOIL SOIL SOIL SOIL SOIL D.F.: 1.00 1.02 0.980 1.00 0.962 1.00 Units: UG/KG UG/KG UG/KG UG/KG UG/KG UG/KG Toluene-d8 103 Ł 101 101 왐 100 왐 105 웋 101 ş Surrogate Bromofluorobenzene 91 ş 87 86 ş 89 ş. 92 r 89 ş, å Recovery 1.2-Dichloroethane-d4 101 કૃ 101 કૃ 96 91 92 96 ş Chloromethane 11 11 13 10 10 Bromomethane\_\_\_\_ 11 U 11 U 11 U 13 10 IJ 10 Vinyl Chloride\_\_\_\_\_ 11 II 11 II 11 U 13 ΤŢ TT 10 IJ Chloroethane\_\_\_\_ 11 [] 11 IJ 11 U 13 U Ħ 10 IJ 10 Methylene Chloride\_\_\_\_\_ 30 B 22 B 21 B 20 В 12 13 В Acetone 11 U 11 U 13 U 11 U 10 U 10 TT Carbon Disulfide\_\_\_\_\_ 6 [] 6 11 6 Ħ 6 IJ 5 Ħ 5 IJ 1,1-Dichloroethene\_\_\_\_ 5 100 105 웋 93 Ł ¥ 1,1-Dichloroethane\_\_\_\_ П 6 Ħ 6 ĪΙ 6 Ħ 5 П 1,2-Dichloroethene (total) U U U Chloroform 6 TT IJ TT Ħ Ħ U 1,2-Dichloroethane 6 IJ П ſΤ U 2-Butanone 11 [] 11 11 11 11 13 U 10 U 10 IJ 1,1,1-Trichloroethane\_\_\_\_ 6 Ħ 6 TT Ħ TT. IJ Carbon Tetrachloride\_\_\_\_\_ 6 П 6 IJ 6 U U U 5 IJ Bromodichloromethane\_\_\_\_\_ IJ Π ΙŢ IJ U 1,2-Dichloropropane\_\_\_\_\_ 6 IJ 6 U 6 П 6 П 5 U cis-1,3-Dichloropropene\_\_\_\_ U П Ħ 6 IJ U 5 Trichloroethene U 95 ş Ħ ş 94 Dibromochloromethane TT IJ 6 Ħ Ħ Ħ 5 П 1,1,2-Trichloroethane\_\_\_\_ 6 IJ U 6 П 6 Ħ IJ 5 U Benzene U ¥ tτ ŧΤ 95 왐 Trans-1,3-Dichloropropene\_\_\_\_ 6 U 6 U 6 IJ 6 U IJ 5 13 Bromoform 6 U IJ TT Ħ 6 U 5 U 4-Methy1-2-pentanone 11 IJ 11 U U 11 13 10 IJ 10 Ħ 2-Hexanone 11 U 11 U 11 U 13 IJ 10 Ħ 10 U Tetrachloroethene\_\_\_\_ 6 Ü 6 U 6 6 U 5 IJ 5 U 1,1,2,2-Tetrachloroethane\_\_\_\_ 6 IJ U Ħ 6 6 IJ 6 U 5 П Toluene 6 IJ 108 왐 107 6 П U 106

RFW Batch Number: 0011L175

<sup>\*=</sup> Outside of EPA CLP OC limits.

| RFW Batch Number: 0011L17 | 5 Clie   | nt: TNUH | ANFORI | B00-068 | H11: | 27 Work C | rder | : 109850010 | 01 | Page:    | 1b  |   |            |                    |
|---------------------------|----------|----------|--------|---------|------|-----------|------|-------------|----|----------|-----|---|------------|--------------------|
|                           | Cust ID: | B10F88   |        | B10F88  | 1    | B10F88    | 3    | B10F89      |    | VBLKXS   |     |   | VBLKXS BS  | ပ                  |
|                           | RFW#:    | 001      | -      | 001 MS  | 1    | 001 MSD   | )    | 002         |    | 00LVH484 | -MB | 1 | 00LVH484-M | в1 <sup>С. Э</sup> |
| Chlorobenzene             |          | 6        | U      | 106     | 8    | 106       | *    | 6           | U  |          | 5   | U | 105        | *                  |
| Ethylbenzene              |          | 6        | U      | 6       | U    | 6         | U    | 6           | U  |          | 5   | U | 5          | U                  |
| Styrene                   |          | 6        | Ū      | 6       | U    | 6         | U    | 6           | U  |          | 5   | U | 5          | U                  |
| Xylene (total)            |          | 6        | U      | 6       | U    | 6         | U    | 6           | U  |          | 5   | U | 5          | Ü                  |
| *= Outside of EPA CLP QC  | limíts.  |          |        |         |      | •         |      |             |    |          |     |   |            |                    |

1 E

# VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

| Lab Name: Recra.LabNet Contract: 10985 | B10F88<br>                                   |
|--|--|
| Lab Code: Recra Case No.:              | SAS No.: SDG No.:                            |
| Matrix: (soil/water) <u>SOIL</u>       | Lab Sample ID: 0011L175-001                  |
| Sample wt/vol: 4.90 (g/mL) G           | Lab File ID: h111014                         |
| Level: (low/med) <u>LOW</u>            | Date Received: <u>11/07/00</u>               |
| % Moisture: not dec10                  | Date Analyzed: <u>11/10/00</u>               |
| Column: (pack/cap) <u>CAP</u>          | Dilution Factor: 1.02                        |
|  | ENTRATION UNITS:<br>L or ug/Kg) <u>UG/KG</u> |
| CAS NUMBER COMPOUND NAME               | RT EST. CONC. Q                              |

# 1E VOLATILE ORGANICS ANALYSIS SHEET . TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

| Lab Name: <u>Recra.LabNet</u> Contra | B10F89<br>act: 10985001001                 |
|--------------------------------------|--|
| Lab Code: Recra Case No.:            | SAS No.: SDG No.:                          |
| Matrix: (soil/water) <u>SOIL</u>     | Lab Sample ID: 0011L175-002                |
| Sample wt/vol: $5.20$ (g/mL) G       | Lab File ID: h111017                       |
| Level: (low/med) <u>LOW</u>          | Date Received: 11/07/00                    |
| % Moisture: not dec. 25              | Date Analyzed: 11/10/00                    |
| Column: (pack/cap) <u>CAP</u>        | Dilution Factor: 0.962                     |
| Number TICs found: <u>1</u>          | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG |
| CAS NUMBER COMPOUND                  | NAME RT EST. CONC. Q                       |

# 1E

# VOLATILE ORGANICS ANALYSIS SHEET TENTATIVELY IDENTIFIED COMPOUNDS

|   | EPA  | SAMPLE | NO. |
|---|------|--------|-----|
|   |      |        |     |
| ĺ | VBLK | KS     | ĺ   |

| Lab Name: Recra.LabNet Contract: ; | VBLKXS<br>10985001001       |
|------------------------------------|-----------------------------|
| Lab Code: Recra Case No.:          | SAS No.: SDG No.:           |
| Matrix: (soil/water) <u>SOIL</u>   | Lab Sample ID: 00LVH484-MB1 |
| Sample wt/vol: 5.00 (g/mL) G       | Lab File ID: h111009        |
| Level: (low/med) <u>LOW</u>        | Date Received: 11/10/00     |
| % Moisture: not dec0               | Date Analyzed: 11/10/00     |
| Column: (pack/cap) <u>CAP</u>      | Dilution Factor: 1.00       |
|                                    | CONCENTRATION UNITS:        |

|   | CAS NUMBER | COMPOUND NAME | RT                                      | EST. CONC.  | <br>  Q |
|---|------------|---------------|---|-------------|---------|
| I |            |               | ===== ================================= | #E===#E==== | ====    |
| j | 1.         |               |   |             | ] ]     |
|   |            |               |   |             | ll      |

| RECRA Lat  |  |                 |                     | ody Ti                                |                 |                     |                |   |                             |               |  | Re              | qu               | es       | Page         | e . ! . c    | of                          | _  |               |                            | R             | ECR<br>abNe    |
|--|--|-----------------|---------------------|---------------------------------------|-----------------|---------------------|----------------|---|-----------------------------|---------------|--|-----------------|------------------|----------|--------------|--------------|-----------------------------|--|---------------|----------------------------|---------------|----------------|
| 0011   | L17                                    | 5               | AU                  | TELD PERS                             | SONNEL:         | COMI                | PLEIE          | UNLY S  | HAUED                       | AHE<br>A      | EA<br>Ei   |                 |                  |          |              | C-           | 1 -                         | <b>-</b> Ɗ                                       |               |                            | ) L8          | IDNE           |
| Client   | <u> </u>                               | - Hans          | ord Bo              | 0-04B                                 |                 |                     | Refrige        | erator#   |                             | li.           | 5  | I i             |                  |          |              | Īs           | 1                           | 15   | S             |                            |               |                |
| Est. Final Pro   | _                                      |                 |                     |                                       |                 |                     | #/Type         | Container   | Liquid                      |               |  |                 |                  |          |              |              |                             |  |               |                            |               |                |
| Project #1   |  |                 | 1-001-0             | 999.00                                | 0               |                     | ,              |   | Solid                       | عما           | las  |                 |                  |          |              | las          |                             | امد  | las           |                            |               |                |
| Project Conta  |  |                 |                     |                                       |                 |                     | Volume         | •   | Liquid                      | 0             | <b>↓</b> "                                       |                 |                  |          |              | 0            | <u>'</u>                    |  | 0             |                            |               |                |
| RECRA Proje  | et Mana                                | 1907 <u>(2)</u> |                     |                                       |                 |                     |                |   | Solid                       | 450           | ⊋s⊘  |                 |                  | · ·      |              | 25           | <u> </u>                    | 1350   | <u> 450</u>   |                            |               | _              |
| ac Spric   | <del></del>                            | Del <u>81</u>   | C TAT               | <u> </u>                              | <u> </u>        |                     | Preser         | vatives   |                             |               | 000  | ANIC            |                  |          |              | 1-           | 200                         |  |               |                            |               |                |
| Date Rec'd   |  | 7-00            | Date Due            | 11-28-0                               | <u> </u>        |                     | ANALY<br>REQUE |   | -                           | <b>∀</b><br>Ø |  | Pest<br>PCB AIN | Te T             |          |              | Metai 3      | S S                         | A H  | £             |                            |               |                |
| MATRIX   |  |                 | <del></del>         |                                       | 1 44            | ntrix               |                | T   | 7                           | -             | ·  | 11              | ļ '              |          | RECRA        | LabNe        | t Use                       |  | 4             | +                          |               |                |
| CODES:  S - Soil  SE - Sediment  SO - Solid  SL - Sludge | Lab<br>ID                              |                 | Client ID/Des       | cription                              | Ch<br>(         | OSEN<br>OSEN<br>(V) | Metrix         | Date<br>Collected                                 | Time<br>Collected           | H HOOS        | Sess H   |                 |                  |          |              | RCPA TO      | Icnto                       | TCD03<br>TSFD                                    | THH           |                            |               |                |
| W - Water<br>O - Oil                                     | 201                                    | BIC             | F88                 |                                       |                 |                     | 5              | 1/1/00  | 1040                        | ×             | ×  |                 |                  |          |              | ×            | /                           | ×  | ×             |                            |               |                |
| A - Air<br>DS - Drum                                     | વ્યા                                   |                 | F89                 |                                       |                 |                     | 1              | ***   | 0945                        | ×             | Х  |                 | Ī                |          |              | ×            | /                           | ×  | ×             |                            |               |                |
| Solide   |  |                 |                     |                                       |                 |                     | <b>1</b>       |   |                             |               |  |                 |                  |          |              | 1            | Ť                           | 1  |               |                            | $\top$        |                |
| DL - Drum<br>Liquids                                     |  |                 |                     |                                       |                 |                     |                |   |                             |               |  |                 |                  |          |              |              |                             | 1  |               |                            | ╁             | -4             |
| L - EP/TCLP<br>Leachate                                  |  |                 |                     |                                       |                 |                     |                | <del>-</del> -                                    | 1                           |               |  |                 |                  |          |              | 1            |                             |  |               | -+                         | -             | -              |
| Wi - Wipe<br>X - Other                                   |  |                 |                     |                                       |                 |                     |                |   | <del> </del>                |               |  |                 |                  | $\neg$   |              | 1            |                             |  | <del>  </del> |                            | +             | +              |
| F - Fish   | } ————-                                | -               | · · · · · · · · · · |                                       |                 | 1                   |                | <b>†</b> • • • • • • • • • • • • • • • • • • •    |                             | -             | <del>                                     </del> |                 |                  |          | _            |              |                             | <del>                                     </del> |               |                            |               | <del>- -</del> |
|  |  |                 |                     |                                       |                 | <b></b>             |                | <del>                                      </del> | <del> </del>                |               |  |                 | $\dashv$         | $\dashv$ |              | $\dagger$    |                             | <del> </del>                                     |               |                            |               | +              |
|  | <del></del>                            |                 | <del></del>         |                                       |                 |                     |                | <del> </del>                                      | <del> </del>                |               |  |                 |                  | _        |              | 1            | 1                           | <del> </del>                                     | <del>  </del> |                            | ╁             | +              |
|  |  |                 |                     |                                       |                 |                     |                | <del>                                     </del>  | <del> </del>                |               |  |                 |                  | $\dashv$ |              | +            | ļ ——                        | <del> </del>                                     |               |                            |               |                |
| Special instruct   | lons:                                  |                 | <u>∽~~~</u>         | 0                                     |                 | DATE/               | REVISION       | NS: ,   |                             |               |  |                 | <u> </u>         |          |              | ╌            | <u> </u>                    | PEC  |               | Net Use (                  |               |                |
| Special Instruct   | ······································ | ryki            | x QC                | 0                                     |                 |                     |                |   | ملاو <sup>≠</sup> د<br>بصعو |               |  | m, \<br>-{}-u   | Voa<br>ver       | 211C     | عدله<br>عدله | do 1)        | amples<br>Shippe<br>and Del | were:  | or            | COC 1<br>1) Pres<br>Packag | ape wa        | Outer          |
| 1141   | ' '                                    | Kiii            | л <b>с</b>          | •                                     |                 |                     |                | HUOCH, E  | -par                        | μQι           | •.   |                 |                  |          |              | - 1          | rbiN#                       |  |               | 2) Unb                     | roken d       | on Outer       |
| !  |  |                 |                     |                                       | į               |                     | , .            | 4   |                             | _             |  |                 |                  |          |              | 2)           | Ambier                      | nt or Ch   | Med)          | Packaç<br>3) Pres          |               | or N<br>Sample |
|  |  |                 |                     |                                       |                 |                     |                | 5   | :                           |               |  |                 |                  |          |              | 3)<br>C<br>D | Receive<br>Indition         | ed in G<br>or<br>Indicate                        | <b>(N)</b>    | 4) Unb                     | roken o       | ) or N<br>m    |
|  |  |                 |                     | · · · · · · · · · · · · · · · · · · · |                 |                     |                | 6   |                             |               |  | <del></del>     |                  |          |              |              |                             | Preserve   | ed            | Sample<br>COC R            | <i>(</i> ፝ጞ º | r N            |
| Relinguished<br>by                                       |  | Received<br>by  | Date                | Time                                  | Relinquis<br>by | shed                |                | Received<br>by                                    | Di                          | ete :         | Tim  | •               |                  |          | Between      | £1           | Dacel                       |  | N             | Upon S                     | ample         | Rec'l          |
| clor 5   | <u></u>                                | ) k <           | <u> </u>            | (032)                                 |                 | ^~~                 |                |   |                             |               |  |                 | COC P            | lecord?  | Y or         |              | Heceivo<br>Iding T          |  |               | Cooler                     | (7)           | or N           |
| L ISC X  |  | CA)             | <u>0 مادا</u> –     | <u> </u>                              | COMP(           | , <u>.</u><br>7211  | <b>E</b>       |   | ORIGI                       | NAI           | <del>!</del>                                     | —               | NOTES<br>1235 79 |          | ייר          |              |                             | ()or   | N             | Temp                       | J C           | , .с           |

| Bechtel Hanfo                                 | ord Inc.                 |              | CH/                | AIN OF CUST         | ODY/S   | AMPLE  | ANALY   | SIS   | REQ  | UEST   |                      | B00  | -068-83  | Page 1        | of <u>1</u>  |
|---|--------------------------|--------------|--------------------|---------------------|---|--|---|---|--|--|----------------------|--|--|---------------|--|
| Collector My                                  | <u> </u>                 |              |                    | y Contact           | Telephon<br>372-95  | ne No.   |   |   |  | Coordinato                                   | Pr                   | ice Code   | 8L   |               | raarouad   |
| Project Designation 200 Area Groundwater Well | l Drilling Waste Designa |              | Sampling<br>200 We | g Location<br>Vest  |   |  |   |   | SAF No<br>B00-068                                    |  | Ai                   | r Quality  | []   |               | Days   |
| Ice Chest No.                                 | 4-068 (18                | 0F1)         | Field Log<br>EL    | gbook No.           |   | COA<br>JRCRA032                                  | :00   |   | Fed-F  |  |                      |  |  |               |  |
| Shipped To                                    | 5 11-1-00                |              | Offsite P          | Property No.        | > <b>Ø</b> Ø  | 5  |   |   | Bilibur  | Leding/Ajrol                                 | SATIES.              | 53   | <u></u> \$80                                     | 37            | 1  |
| POSSIBLE SAMPLE HAZ                           | ARDS/REMARKS             |              |                    | Preservation        | Cool 4C   | Cool 4C  | None  | Non   | *  | None   |                      |  |  |               |  |
|   |                          |              |                    | Type of Container   | aG  | aG   | aG  | aG  |  | aG   |                      |  |  |               |  |
| 1   |                          |              |                    | No. of Container(s) | ı   | 1  | 1   | 350   |  | (0-1)  |                      | <u> </u>   |  | _ <del></del> | ļ  |
| Special Handling and/or St                    | orage                    |              | ļ                  | Volume              | 250mL   | 250mL  | 250mL   | 250n  |  | 50ml.  |                      | <u> </u>   |  |               |  |
|   | SAMPLE ANAL              | LYSIS        |                    | :                   | Semi-VOÀ -<br>8270A (TCL),<br>Semi-VOA<br>8270A (Adé-<br>On) (m-<br>Cresof) | VOA - \$260A<br>(TCL)                            | IC Anions -<br>300.0<br>{Nitrate};<br>Sulfides -<br>9030; Total<br>Cyanide - 9010 | ICP Me<br>6010<br>(Supertr<br>Mercu<br>7471 - | IA<br>race),<br>Iry                                  | (Soil) -<br>9045                             | Tio                  | To:  |  |               |  |
| Sample No.                                    | Matrix *                 | Sample       | : Date             | Sample Time         |   |  | 全部  | 170   | <b>B</b> 2   | <b>1</b> 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 33                   |  |  | ters.         |  |
| B10F88  | SOIL                     | 1i-Ol        | CO:                | 1040                | X   | X  | X   | ۲   |  | X  | BOY                  | WIL  | Som  | -00-          | 0154   |
|   | <u> </u>                 | <b></b>      |                    |                     | <u> </u>  | <del>                                     </del> | <b>├</b> ─┤   |   | _  |  |                      |  |  |               | <del> </del>   |
|   | <b></b> '                | <del> </del> |                    | _                   | <del> </del>  | <del> </del>                                     |   |   |  |  |                      | <del> </del>                                     | <del>                                     </del> |               | <del>                                     </del>   |
|   | <del> </del>             | <del> </del> |                    |                     | <del>                                     </del>                            | <del> </del>                                     |   |   |  |  |                      | <del>                                     </del> | <del> </del>                                     |               | <del>                                     </del>   |
| CHAIN OF POSSESSI                             |                          |              | ■/Print N          |                     | <u> </u>  |  | TAL INSTR   | UCTIO   | DNS  |  |                      | <u> </u>   | <u> </u>   |               | Matrix •   |
| Relinquished By Relinquished By               | Date/Time                | Received     | I By               | Da 11.7 00          | ate/Time ate/Time ate/Time ate/Time ate/Time                                | 30   | Samples s<br>Shipping<br>Collector<br>on //                                       | tored<br>Facilio<br>not as                    | in Ref.#<br>iy on <u>  </u><br>vajiable  <br>ODfor s | 2B at th // 60 to relinquishipment.          | <u>)</u> .<br>sh søm | ples   |  |               | S-Soil SE-Scaliment SO-Solids S-Shadge W = Water O-Oil A-Air DS-Drum Solids DL-Drum Liquids T-Tissue WI-Wipe L-Liquid V-Vegetation X-Other |
| Relinquished By                               | Date/Time                | RECEIVE      | <del></del>        |                     |   |  |   |   |  |  |                      | 1/6/0  |  | ate/Time      | <u> </u>   |
| LABORATORY Received SECTION                   | Ву                       |              |                    |                     | Tit   | itle   |   |   |  |  |                      |  | v  | Me/ I IMC     |  |
| FINAL SAMPLE Disposal DISPOSITION             | Method                   |              | -                  |                     |   |  | Dispos  | ied By  |  |  |                      |  | 1)   | Date: Lime    |  |

| Bechte  | el Hanfoi    | rd Inc.                       | C                       | HAIN OF CUST                                     | TODY/S  | AMPLE  | ANAL  | YSIS  | REQUEST   | ٠                          | ВО          | 0-068-84     | Page 1  | of <u>I</u>   |
|---|--------------|-------------------------------|-------------------------|--|---|--|---|---|---|----------------------------|-------------|--------------|---------|---|
| Collector // //   | M            |                               | Comp<br>D V             | eny Contact<br>Veckes                            | Telepho<br>372-9  | ne No.<br>524                                    |   |   | Project Coordin<br>TRENT, SJ  | etor                       | Price Code  | 8L           |         | rnaround  |
| Project Designatio<br>200 Area Ground   |              | Drilling Waste Designa        |                         | ling Location<br>West                            |   |  |   |   | SAF No.<br>B00-068  |                            | Air Quality | <b>y</b> []  | 21      | Days  |
| Ice Chest No.   | RC           | 99-01041                      | Field EL                | Logbook No.                                      |   | COA<br>JRCRA032                                  | 200   |   | Method of Ships<br>Fed-EX   | ment                       |             |              |         |   |
| Shipped To<br>TMA/RECRA   |              | 2 11-1-00                     | Offsit                  | e Property No. Ad                                | 100   | øs   | •   |   | Bill of Lading/   | 38                         | No.795      | 36           | 32      | 7   |
| POSSIBLE SAM  | IPLE HAZA    | RDS/REMARKS                   |                         | Preservation                                     | Cool 4C   | Cool 4C  | None  | Non   | e None  |                            |             |              |         |   |
|   |              |                               | ٠                       | Type of Container                                | aG  | aG   | аG  | aG  | aG  |                            |             |              |         |   |
|   |              |                               |                         | No. of Container(s)                              | 1   | 1  | 1   | 1   | l   |                            |             |              |         |   |
| Special Handling  | and/or Stor  | rage                          |                         | Volume   | 250mL   | 250m1.   | 250mL   | 250n  | iL 250ml.   |                            |             |              |         |   |
|   |              | SAMPLE ANAL                   | .YSIS                   | •  | Semi-VOA<br>8270A (TCL),<br>Semi-VOA<br>8270A (Add-<br>On) (m-<br>Cresol) | VOA - \$260A<br>(TCL)                            | IC Anions -<br>300.0<br>{Nitrate};<br>Sulfides -<br>9030; Total<br>Cyanide - 9010 | ICP Mer<br>6010.<br>(Supertr:<br>Mercui<br>7471 - ( | A 9045<br>ace),<br>ry -   | Til                        | , To:       |              |         |   |
| Sample N  | Vo.          | Matrix *                      | Sample Date             | Sample Time                                      | 15. 7.183   |  |   | 1.7.3   | ia. a do  | - T.                       |             |              | 1, 100  |   |
| B10F89  |              | SOIL                          | 11-01-0                 | 00 0445  | X   | X  | X   | 7   | < X   | BC                         | YWI7        | mw           | -00-    | 0160  |
|   |              |                               |                         | •  |   |  |   |   |   |                            |             | -            |         |   |
| -   |              |                               |                         |  |   | <del>                                     </del> |   |   |   |                            |             | <del> </del> |         |   |
|   |              |                               |                         |  |   |  |   |   |   |                            |             |              |         | ,   |
| Relinquished By Relinquished By Relinquished By Relinquished By Relinquished By Relinquished By | 372<br>372   | Date/Time /53  Date/Time   53 | Received By Received By | A Company De | //-/ <i>1</i> 00  | 536<br>50<br>0                                   | Shipping F<br>Collector n   | ored in<br>acility<br>ot avai                       | Ref.# <u>PB</u> at<br>on <u>11 / 1 / 1</u><br>itable to relinge<br>of shipment. | <u>(27.</u> 7)<br>iish sar |             | Da           | e/Time  | Matrix *  5-Sold SE-Sodiment SO-Sold S -Sludge W = Water O-Oll A-Air DS-Drum Solide DL-Drum Liquids T-Tisone WI-Wijee L-Liquid V-Vegetation X-Other |
| SECTION   |              |                               |                         |  |   | •  |   |   |   |                            |             |              |         |   |
| FINAL SAMPLE DISPOSITION  | Disposal Met | thod                          |                         | :  |   |  | Dispos  | ed By   |   |                            |             | Da           | te/Lime |   |

# Figure 1. Sample Check-in List

| Date/Time Received: 11-7-00 / 0930   |                                       |
|--|---------------------------------------|
| SDG#: 0011L175   | ·<br>•                                |
| Work Order Number:   | SAF#_ 300:068                         |
| Shipping Container ID:   | Chain of Custody # Pm-0.8-83          |
| 1. Custody Seals on shipping container intact?   | Yes [] No []                          |
| 2. Custody Seals dated and signed?   | Yes [7 No []                          |
| 3. Chain-of-Custody record present?  | Yes [] No []                          |
| 4. Cooler temperature 2.0°C  |                                       |
| 5. Vermiculite/packing materials is  | Wet [] Dry [X                         |
| 6. Number of samples in shipping container:  | 10                                    |
| 7. Sample holding times exceeded?  | Yes [] No []                          |
|  | azard labels ppropriate sample labels |
|  | eaking<br>have air bubbles            |
| <ul><li>10. Were any anomalies identified in sample reco</li><li>11. Description of anomalies (include sample numbers)</li></ul>   | 10                                    |
| Sample Custodian/Laboratory: The Custodian/Laboratory: On Custodian/Lab | Porcea Date: 11-7-00  By              |

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# ERC Radiological Counting Facility Analysis Report

RCF Number RCF8666 Sample Date & Time \_\_\_ 11/1/00 0945 Project ID: 200 AREA G/W SAF Number: B00-068 Date Analyzed 11/6/00 7:47:3 Sample ID: BOYW17 Gentres Energy Analysis Nuclide Activity (pCi/z) Error (pCl/g) MDC (pCl/g) Co-60 1.8E-01 1.8E-01 Cs-137 1.7E-01 1.7E-01 Eu-152 < 3.7E-01 3.75-01 Eu-154 BIOF89 6.3E-01 6.3E-01 Eu-155 < 3.3E-01 3.3E-01 T1-208 2.3E-01 • 2.3E-01 Pb-214 3.0E-01 3.0E-01 Bi-214 < 1.4E+00 1.4E+00

Ra-226 2.1E+00 2.1E+00 Ac-228 4.2E-01 4.2E-01 Th-234 **«** 1.4E+00 1.4E+00

2.8E-01

7.4E-01

2.1E-01

| Total GEA (pCl/g) | •               | <i>/</i> • |               |   |          |          |
|-------------------|-----------------|------------|---------------|---|----------|----------|
|                   | Activity (pCi/g | )          | Errar (pCl/g) |   | lpha MDC | Bete MDC |
| Gross Alpha++     | 1.4E=00         | +/-        | 6.7E-01       | A | (bCh8)   | (pCVg)   |
| Gross Beta        | 1.55+01         | 4/-        | 1.5E+00       |   | 6.59-01  | 8.5E+00  |

### Definitions:

Pa-234

U-235

Am-241

All errors reported at 2 standard divistions.

<

<

2.8E-01

7.4E-01

2.1E-01

N/R = no result or analysis not sequested. «MDC = Lass than descrips limit.

All GEA results reported 35 "<" list the Minimum Demonable Concentration (MDC) value for that radiomedide.

Ruunling error may result in the reported meal CRA activity differing from the sum of the > MDC: CEA values in the sucured again cant digit.

### For sails and natural samples, the following applies:

The analysis of U-238 is based on the unavery of Pa-234m.

The analysis of Np-237 in based on the activity of Pa-233.

U-238das is the earlying of Fe-214 and Bi-214, short lived designer products of U-238. Equilibrium between parent and daughter products probably door BU. excist in distanted magnificate.

Th. 272dan is the activity of Ac-228, Pb-212, and Ti-200, where lived designer products of Th-232. Equilibrium between percent and daughter products may

not exist in disturbed anterials.

Other samples, not experience products. The results results for the Th. U. examples and daughter products. The results rount then be balanced for the gross siple unalysis.

\*\*The gross alpha results are not corrected

# No peaks for this radiomeclide were visible above background in the spectrum. The result was repurted at less than MDC,

Applyst

11/6/00

Report To Jose Kusper Fax 372-9487

Jose Kenerer

372-9487

Report Printed: Monday, November 06, 2000

# ERC Radiological Counting Facility Analysis Report

Sample ID: RCY Number RC178665 Project TD: BOYW16 200 AREA G/W SAF Number: B00-068 Sample Date & Time Date Analyzed 11/6/00 7:15:3 00/1/11 8

Cutatra Energy Analysis

| Am-241 < | ٨        | Th-234 < | ٨        | ٨       | ^       |                  | ٨       | ٨       | Eu-152 < | C-137 < | ٨       |                  |
|----------|----------|----------|----------|---------|---------|------------------|---------|---------|----------|---------|---------|------------------|
| 5.2E-01  | 1.512+00 | 4.3E+00  | 5.5E-01  | 1.3E+00 | 7.25+00 | 3.25+00          | 1.05+00 | 1.3E+00 | 1.05+00  | 4.9E-01 | 3.91 01 | Activity (pCl/g) |
|          |          |          |          |         |         |                  |         |         |          |         |         | Error (pCUg)     |
| 5.213-01 | 1.515+00 | 4.36+00  | S.512-01 | 1.35+00 | 7.25+00 | 3. <b>2E+0</b> 0 | 1.05+00 | 1.35+00 | 1.0E+00  | 4.95.01 | 3.96-01 | MDC (pCl/g)      |

TIRTO BIDF88

| 1923 CEV (DCAE) |                 | 7 |               |           |        |
|-----------------|-----------------|---|---------------|-----------|--------|
|                 | Activity (pCVg) |   | Error (pCI/g) | Alaka MOC | Z X    |
| Gross Alpha**   | 1.65+00         | Ļ | 6.92-01       | (8/10.e)  | 8/rud) |
| Gross Betz      | 1.88+01         | ŧ | 1.68+00       | 1.111.01  | - Fe   |
| Taffahrland:    |                 |   |               |           |        |

Minimum Deactable Chacagestion (MDC) value for their nationalists.

Limal GEA satisfy differing from the sum of the > MDC GEA values in the second significant digit.

# pies, the fallowing applie

tacts of U-238. Equilibrium between parent and daughter products probably duet not

-212, and Ti-208, short lived daughter pred iners of Th-232. Squidhnium between garnet and daughter produces may

eservals, may have imapplicable resolut for the  $\Omega_{
m h}$  U, transummics and daughter products. The lphaE Ches or

ter dan NOC

sed for many absorbides

11/6/00

772-9417 Fase 372-9467

Joan Kesseer Joan Kesseer

Report To

Report Primed: Musiky No Jer 95, 2000